

Problems and Prospects of Recommended Poultry Farming Practices in Jaipur District of Rajasthan

राजस्थान के जयपुर जिले में संस्तुतित कुक्कुट पालन
व्यवसाय की समस्याएँ एवं संभावनाएँ

Hanuman Sahay Bunkar

Thesis

**Doctor of Philosophy in Agriculture
(Extension Education)**



2016

**Department of Extension Education
S.K.N. COLLEGE OF AGRICULTURE, JOBNER
S.K.N. AGRICULTURE UNIVERSITY JOBNER– 303 329**

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Thesis

**Sri Karan Narendra Agriculture University, Jobner
in partial fulfilment of the requirements for
the degree of**

Doctor of Philosophy

In

**Faculty of Agriculture
(Extension Education)**

By

Hanuman Sahay Bunkar

2016

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Dated :2016

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Chapter-1

INTRODUCTION

In India, about 65 per cent of the population is engaged in agriculture and rearing of livestock, subsidiary to agriculture. There exists a symbiotic relationship in men-land-livestock ecosystem. Livestock comprising of mainly cattle, buffaloes and poultry have a complementary, supplementary and sustainable relationship with crop under mixed farming system prevalent in our country.

The origins of the poultry industry can be traced back to India. The modern crossbreed hen owes its ancestry to the Red Jungle fowl of India. However, poultry farming as a commercial enterprise is a recent phenomenon in our country.

Poultry occupies a pivotal position among livestock based vocations to bring about rapid economic growth particularly benefiting the weaker sections of the farmers. Further, it needs low capital investment and yet assures quick returns, within weeks in case of broilers and months in case of layers.

Indian poultry industry as it exists today is a mixture of traditional backyard system of poultry keeping and modern space age technology. The later has evolved from the former and has organized itself into a vertically integrated and organized form during last 40 years. The modern industry has achieved an impressive growth during this short period. The growth of industry has not only been in size but also in productivity, sophistication and quality. Modern intensive system of poultry accounts for about 70% of total poultry meat and egg production in the country at present. The traditional system of poultry keeping although still prevalent in tribal

and rural areas of the country is losing its importance day-by-day under the impact of modernization and industrialization.

Organized poultry farming, as opposed to backyard farming was introduced in the early sixties, as a part of the government approach for planned development of the agricultural sector. Initially, it gained ground as a commercial activity due to the extension work undertaken by the various agencies like the Department of Animal Husbandry, Agricultural Universities and Technical cooperation mission of Food and Agriculture Organization (FAO).

Development of animal husbandry is envisaged in our national plans as an integral part of a sound system of diversified agriculture. Emphasis on integration of farming with animal husbandry is essential for making an efficient use of land, labour and capital. These two activities are needed to be dovetailed for full utilization of farm by products, maintenance of soil fertility, meeting energy requirement and for generating additional income as well as employment in rural areas.

Poultry products processing is a fast growing industry all over the world. In addition to broilers being exclusively grown for meat purposes, the layers after their completion of production period are also processed for meat. The southern states of our country contribute nearly 60-70% of broiler production of the country. The layers industry once again is represented more in the southern states especially, Andhra Pradesh, Tamil Nadu and Maharashtra, producing nearly 70% eggs to the country. Presently about 800 hatcheries are operating in the country. The National Institute of nutrition has recommended 180 eggs and 11 kg of meat for per capita consumption per annum. At present, as per figures of ministry of food processing, per capita availability of meat is 1.6 kg that of

eggs is 1.8 kg or 42 eggs. Average consumption of eggs in major cities is 170 eggs, in smaller cities 40 eggs, in developed rural areas 20 eggs, and in undeveloped rural areas it is only 5 eggs. Only 20% of Indian population is vegetarian. India is the fifth largest producer of eggs and ninth largest producer of poultry meat (42 / Agriculture Today, June, 2012)

Majority of families engaged in agriculture get employment only during the time of ploughing, sowing, harvesting, threshing etc. Most of the farmers are engaged in agricultural operation for about 8-9 months in a year. Under such conditions it is customary to keep poultry as a source of extra income.

It is very versatile industry and can provide jobs to all categories of people. It can be adopted as whole time business on large scale. It can fit very well a mixed farming system to provide additional income to farmers engaged in arable farming. It can be taken as a part time business on small scale by under employed persons involved in service profession. Even house-wife and children can look after small flock of birds in their leisure time for small earning.

Poultry is the least cost alternative only next to fish in terms of conversion of feed to animal protein of high biological value for a given amount of feed and a chicken broiler ranks first followed by chicken, eggs as compared to mutton, pork, beef and milk.

Poultry industry has been estimated that 3300 crore eggs production in the year 2000 will rise to 12000 crore in 2020. The poultry meat output would rise from 7 lakh tonnes to 42 lakh tonnes during the same period. The egg and chicken availability will be 90 eggs and 3100 gm per person per year in 2020, respectively (Poultry Year Book, 2003-04).

Egg and chicken meat are perhaps, the cheapest source of protein to fight protein malnutrition in rural India. Poultry products are not only highly nutritional but it is palatable, digestible and can be used in many appetizing ways. Fertilized eggs are used in vaccine preparation; inedible eggs from hatchery can be used as animal feed and fertilizer. Albumen is used in many pharmaceutical, preparation of paints, varnishes, adhesive etc., egg yolk finds its use in manufacturing of soap, paints, shampoos etc., egg shell as mineral mixture, feathers in millinery goods, endocrine glands for preparation of hormones and other biological products.

Poultry can be used as good laboratory animal because of their small size, low feed intake, ease in handling, fast and sensitive metabolism etc.

Table 1.1 Production of egg by major countries of the world from 2007 to 2009

S.No.	Countries	Production			Percentage share to world total		
		2007	2008	2009	2007	2008	2009
1	Argentina	0.48	0.48	0.48	0.75	0.73	0.71
2	Brazil	1.86	1.94	1.94	2.89	2.93	2.88
3	Canada	0.40	0.42	0.42	0.62	0.63	0.63
4	China	25.65	26.73	27.90	39.90	40.44	41.39
5	Colombia	0.50	0.54	0.58	0.77	0.82	0.86
6	Egypt	0.29	0.29	0.29	0.46	0.45	0.43
7	France	0.88	0.95	0.92	1.37	1.43	1.36
8	Germany	0.79	0.79	0.70	1.22	1.19	1.04
9	India	2.94	3.06	3.06	4.58	4.63	4.54
10	Indonesia	1.38	1.32	1.31	2.15	2.00	1.94
11	Iran Islamic Republic	0.70	0.73	0.78	1.09	1.10	1.15
12	Italy	0.72	0.72	0.72	1.13	1.10	1.07

13	Japan	2.58	2.55	2.51	4.02	3.86	3.72
14	Korea, Republic	0.57	0.59	0.59	0.89	0.90	0.88
15	Malaysia	0.48	0.48	0.48	0.74	0.72	0.71
16	Mexico	2.29	2.34	2.34	3.56	3.54	3.47
17	Netherlands	0.62	0.63	0.63	0.97	0.95	0.93
18	Nigeria	0.55	0.55	0.55	0.86	0.84	0.82
19	Pakistan	0.49	0.51	0.54	0.76	0.77	0.80
20	Philippines	0.54	0.62	0.63	0.84	0.94	0.93
21	Poland	0.55	0.58	0.60	0.85	0.88	0.90
22	Romania	0.33	0.34	0.31	0.51	0.52	0.46
23	Russian Federation	2.14	2.14	2.21	3.33	3.23	3.28
24	South Africa	0.44	0.47	0.45	0.68	0.72	0.67
25	Spain	0.83	0.80	0.80	1.29	1.21	1.19
26	Thailand	0.85	0.87	0.87	1.32	1.32	1.29
27.	Turkey	0.80	0.82	0.86	1.24	1.25	1.28
28.	Ukraine	0.81	0.87	0.92	1.27	1.31	1.37
29.	United Kingdom	0.59	0.61	0.61	0.92	0.93	0.91
30.	USA	5.40	5.34	5.34	8.39	8.08	7.92
	Other countries	6.85	6.99	7.07	10.65	10.58	10.48
	World+	64.30	66.10	67.41	100.00	100.00	100.00
	Africa+	2.50	2.54	2.51	3.88	3.84	3.73
	-- North America+	5.79	5.76	5.76	9.01	8.71	8.55
	-- South America+	3.71	3.86	3.91	5.76	5.84	5.79
	-- Asia+	39.18	40.59	41.89	60.94	61.40	62.14
	Europe+	10.08	10.27	10.24	15.68	15.53	15.20

Source: FAOSTAT production data, www.framt.org

Table 1.2 State-wise estimates of eggs production from 2004-05 to 2009-10

(Lakh)

States	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Andhra Pradesh	158040	164534	159411	175884	183446	193958
Arunachal Pradesh	90	73	73	394	361	380
Assam	5216	5359	5350	4910	4659	4671
Bihar	7894	10012	9454	10707	10740	11002
Chhattishgarh	8795	8875	9216	9184	3738	10520
Goa	146	146	135	152	149	148
Gujarat	5031	5775	7757	8256	12675	12762
Haryana	14816	15125	39596	41031	38150	38453
Himanchal Pradesh	811	753	772	843	977	1000
Jammu and Kashmir	6105	6320	6320	6682	7208	7692
Jharkhand	6980	6970	7110	7130	3995	3925
Karnataka	17719	18348	19498	21181	23688	29094
Kerala	11974	11956	11987	13831	15095	16330
Madhya Pradesh	9023	9414	9518	9747	6713	7075
Maharashtra	34362	35227	33950	34640	35502	38640
Manipur	822	835	836	845	1105	1119
Meghalaya	946	973	978	990	995	999
Mizoram	317	326	348	403	411	371
Nagaland	755	868	868	802	832	834
Orissa	12160	12787	14246	15479	19940	23193
Punjab	36800	35200	37740	37914	36790	32828
Rajasthan	6932	7029	6631	6730	6449	6713
Sikkim	140	146	144	143	143	122
Tamil Nadu	63948	62225	80435	83937	88098	108476
Tripura	1071	1100	1193	1320	1388	1442
Uttar Pradesh	9018	9228	9483	9814	10140	10596
Uttarakhand	1866	1873	1889	1911	1962	2536

West Bengal	28877	29637	30386	30542	31372	32307
A&N Islands	530	477	535	622	618	657
Chandigarh	280	280	291	282	273	249
D. & N. Haveli	50	48	48	48	71	71
Darman & Diu	9	11	11	13	19	19
Delhi	264	196	186	182	1	1
Lakshadweep	120	124	127	128	135	138
Puducherry	102	105	107	137	112	113
Total	452009	462354	506630	535810	533947	598436

Source: State / UT Animal Husbandry Department

In the world, USA occupies the first position in poultry meat production (16334 thousand million tonnes) followed by China (11425 thousand million tonnes), Brazil (9940 thousand million tonnes), Mexico (2600 thousand million tonnes), UK (1463 thousand million tonnes) and India ranked twenty third (680 thousand million tonnes). Whereas in egg production, China has first position (27.90 million tonnes) followed by USA (5.34 million tonnes) and India ranked third (3.06 million tonnes). Contribution of agriculture in GDP is 22 per cent, out of which livestock contribution is 6.5 per cent. In livestock 65 per cent is contributed by meat product, 22.5 per cent by dairy product and 12.5 per cent by poultry product (FAO Statistical Book, 2011).

In India, Andhra Pradesh has ranked first (161333929), Tamilnadu has ranked second (117348894), Maharashtra has ranked third and known as India's capital of eggs whereas Rajasthan occupied eighteen (8024424) in poultry production. Total poultry population in India (729209320), Rajasthan has 1.1 percent poultry in India (Livestock Census of India & Rajasthan- 2012 A vision).

Total poultry population in India is 648.8 million nos. Total

eggs and chicken production in India are about 67 billion and 4.80 million tonnes, respectively. With increase in productivity, the national average per capital per annum eggs and chicken meat consumption is 53 and 3 kg, respectively (USDA Review : Indian Egg and Poultry Production, 26 August, 2011).

Table 1.3 State-wise total number of poultry population in India

States	Rural	Urban	Total(Rural +Urban)
Andhra Pradesh	159195345	2138584	161333929
Arunachal Pradesh	2188749	55482	2244231
Assam	26837618	378551	27216169
Bihar	12166096	581956	12748052
Chhattishgarh	22315641	786517	23102158
Goa	270364	21664	292028
Gujarat	14151593	854158	15005751
Haryana	41735613	1085735	42821348
Himanchal Pradesh	1088792	15684	1104476
Jammu and Kashmir	7490476	783233	8273709
Jharkhand	13168223	391305	13559528
Karnataka	51254779	2187251	53442030
Kerala	22985088	1296840	24281928
Madhya Pradesh	11431358	473358	11904716
Maharashtra	75696120	2098451	77794571
Manipur	1920770	578746	2499516
Meghalaya	3379945	20087	3400032
Mizoram	850755	420598	1271353
Nagaland	1838703	339767	2178470
Orissa	19301803	588735	19890538
Punjab	15901002	893074	16794076
Rajasthan	7715491	308933	8024424
Sikkim	445734	6232	451966

Tamil Nadu	105918676	11430218	117348894
Tripura	4092513	180220	4272733
Uttar Pradesh	17185602	1482230	18667832
Uttrakhand	4567486	74451	4641937
West Bengal	51136605	1700971	52837576
A&N Islands	1149753	15610	1165363
Chandigarh	72212	36507	108719
D. & N. Haveli	74028	11944	85972
Darman & Diu	24568	3634	28202
Delhi	37332	6499	43831
Lakshadweep	164541	0	164541
Puducherry	141882	66839	208721
Total	697895256	31314064	729209320

Source: As per 19th Livestock Census, 2012

Table 1.4 Estimates of production and per capita availability of egg 2001-2002 to 2010-2011 (All India)

S. No.	Year	Egg (Million nos.)	Per capita availability (Nos /annum)
1.	2001-2002	38729	37
2.	2002-2003	39823	38
3.	2003-2004	40403	38
4.	2004-2005	45201	42
5.	2005-2006	46235	42
6.	2006-2007	50663	45
7.	2007-2008	53581	47
8.	2008-2009	55395	48
9.	2009-2010	59844	51
10.	2010-2011	61454	53

Source : State /UT Animal Husbandry Department

Table 1.5 Estimated egg and meat production in Rajasthan from the year 2001-2002 to 2010-2011

S. No.	YEAR	Egg production (million) No.	Meat production (000 tonne)
1.	2001-2002	602.17	56.25
2.	2002-2003	635.91	58.61
3.	2003-2004	672.16	62.32
4.	2004-2005	693.26	64.32
5.	2005-2006	702.90	67.84
6.	2006-2007	663.10	69.00
7.	2007-2008	673.09	80.00
8.	2008-2009	645.17	83.81
9.	2009-2010	671.30	92.00
10.	2010-2011	669.70	107.00

Source : Directorate of Animal Husbandry, Jaipur

Total poultry population in Rajasthan is 80.25 lakhs. The district wise poultry population in Rajasthan are 27.38 lakh in Ajmer, 15.79 lakh in Jhunjhunu, 5.50 lakh in Churu, 4.04 lakh in Udaipur, 3.38 lakh in Jaipur, 3.02 lakh in Sikar, 2.69 lakh in Banswara. (Livestock Census, 2012).

Jaipur district is third in rank in Rajasthan in poultry population having organized poultry farms. Jaipur district have about 3.38 lakhs total poultry population. Livestock census -2007 poultry population 4993620 and livestock census-2012 poultry population 8024424 change 3030804 in poultry population and change 60.69 percent poultry population in Rajasthan. (Directorate of Animal Husbandry, Jaipur).

Table 1.6 District-wise poultry population in Rajasthan State

S. No.	Name of district	No. of poultry farms	Poultry At Farm	Poultry At backyard	Total poultry population
1	Ajmer	24507	2639518	98324	2737842
2	Alwar	15	74521	94192	168713
3	Banswara	0	1097	267610	268707
4	Baran	311	623	50785	51408
5	Barmer	0	10	17348	17358
6	Bharatpur	27	25806	147542	173348
7	Bhilwara	132	51144	65861	117005
8	Bikaner	1	1000	22762	23762
9	Bundi	8	10594	22341	32935
10	Chittograrh	0	45	66373	66418
11	Churu	68	484394	65213	549607
12	Dausa	3634	11543	29650	41193
13	Dholpur	16	8900	9233	18133
14	Dungarpur	0	160	177647	177807
15	Hanumangarh	27	77204	59223	136427
16	Jaipur	14889	152202	185503	337705
17	Jaisalmer	146	11	20170	20181
18	Jalore	0	4	17038	17042
19	Jhalawar	152	28250	55932	84182
20	Jhunujhunu	16390	1114605	463929	1578534
21	Jodhpur	63	35241	30083	65324
22	Karauli	225	99	10707	10806
23	Kota	15	1578	19720	21298
24	Nagaur	23	548	74245	74793
25	Pali	21	22092	49352	71444
26	Pratapgarh	0	0	138149	138149
27.	Rajsamand	3	6127	30043	36170
28.	Sawai Madhopur	2	707	22331	23038
29.	Sri Ganganagar	491	13550	44152	57702
30.	Sikar	6237	216441	85241	301682
31.	Sirohi	4	27	52209	52236
32.	Tonk	26	13171	35951	49122
33.	Udaipur	0	0	504353	504353
	Total	67433	4991212	3033212	8024424

Source : As per 19th Livestock Census, 2012

A large pool of manpower including unemployed youth, small farmers, self employees, part time farmers and retired personnel have adopted the profession of poultry farming in the district. In addition, there are other people who are indirectly associated with this profession as feed supply agents, equipment manufactures, pharmaceutical dealers, transporters, labourers etc.

Even though Jaipur district is the third in organized poultry farms yet the progress of poultry production doesn't seem to be satisfactory. Present investigation will be an effort to understand the clear picture of poultry production regarding knowledge, adoption and constraints faced by poultry farmers.

The identification of problems in adoption of recommended poultry production technology will enable the policy makers to prepare plans to rectify these hurdles for mobilizing the quick adoption of recommended poultry production technology and to narrow down the adoption gap which ultimately will improve the socio-economic status of poultry keepers. Although the economic contribution of poultry seems to be quite substantial in the agricultural as well as national economy, the farmers who raise poultry are yet ignorant of improved poultry production technology. Considering the utility of above stated facts, the present study entitled "Problems and prospects of recommended poultry farming practices in Jaipur district of Rajasthan" has been undertaken with the following specific objectives :

- (i) To assess the knowledge level of poultry farmers regarding recommended poultry farming practices.
- (ii) To measure the extent of adoption of recommended poultry farming practices by the farmers.

- (iii) To measure the contribution of poultry farming in the overall economy of poultry farmers.
- (iv) To identify the constraints as perceived by the poultry farmers in adoption of recommended poultry farming practices.
- (v) To explore the modalities for future prospects of improvement in poultry farming.

Scope of the study

So far, India's agriculture has been dominated by the belief that its base is crop production. Its importance is beyond dispute since; food grains fulfill the first basic need by providing calories for sustenance of population. Having achieved a measure of self sufficiency in cereal production, attention now needs to be given to nutritional security and economic access to food. Also focus should be shifted from quantity to quality in the daily diet by enhancing the intake of animal proteins, the major sources of which are egg and meat.

India is known to be the home of the modern hen, which owes its ancestry to the Indian Red Jungle fowl. Found in the Jungles of South and South-East Asia, it is regarded as the ancestor of the present day chicken breeds of the world. Good specimens are found with the nomads in parts of Andhra Pradesh and Karnataka.

Various recent studies suggest that the livestock sector has an enormous potential to improve the socio-economic status of the rural population particularly the landless. Because poultry farming requires minimum capital and ensures quick return it can help improves the quality of life for rural poor. The rearing of poultry can

provide an excellent opportunity for idle or unemployed members of rural families. It is known that children and women can handle the birds with ease.

The introduction of crossbreed birds has made poultry farming a viable and a rapidly growing segment of dynamic agri-business. A notable aspect about poultry is that it is an efficient converter of low-fibre food-stuffs, unfit for human consumption into highly nutritive animal protein food. Village poultry production offers one hope by setting up the local units to serve a cluster of villages. The challenge is to induct a small dose of appropriate husbandry technology which will permit effective management of small flocks.

Despite the promise of revolution in broiler production, it seems to have failed to take off. Presently, we are not been able to emerge as the leader in poultry production in general and broiler production in particular. The old farms are being closed no doubt, new farms are also being opened at the same time but it leads to almost negligible net progress. This calls for a holistic study on the various physical, social and psychological factors associated with the poultry industry.

Rajasthan state too has 4 decades old history of development of poultry industry but still it is at infancy stage. A huge pool of manpower directly or indirectly is associated with poultry. In this direction, the importance of poultry industry in the state's economic scenario can be gauged from the fact that Rajasthan state government recently prepared and approved a holistic project for integrated development of poultry under the cooperative fold to give

boost to rural economy and generate new avenues of employment in the state. It is a general thinking that poultry can assist to give a new direction to the state's economy and efforts need to be focused towards promotion of poultry in a big way. Further, no effort has been made to explore the possible reasons allocated to slow pace of poultry industry i.e. whether it is due to lack of market, cognitive deficiencies or lack of knowledge of technologies or some other factors. At the same time, it is also imperative to know whether the poultry farmers consider farm as an enterprise or not, often the small entrepreneurs fail and their enterprises fold up because of lack of support and guidance and; non possession of required attributes for successful launch and management of enterprise. This calls for assessment of entrepreneurial behaviour of poultry farmers.

Providing balanced food to the rapidly increasing population of the country which has crossed the figure of 1 billion and may be more in the years to come is a basic challenge before us. The task of providing balanced diet to ever increasing population is a stupendous task especially with the limitation of land under cultivation and small size of holding. This has to be met by undertaking livestock based vocations like poultry farming. Undoubtedly, as compared to other states, the production and productivity of poultry in our state is far less. So, there is a wide scope for promotion of this industry in the state.

The present investigation was aimed at studying the existing level of knowledge of poultry farmers about scientific poultry rearing practices. The outcome of this aspect will be of great value to the top and grass root level functionaries to know where client system

stands so far as knowledge of advocated scientific poultry keeping practices is concerned. Thus, looking to the present level of knowledge of poultry farmers, the future line of action could be standardized for working with the poultry farmers and abridging their knowledge gulf.

As also part of proposal, the present study has analyzed the extent of adoption of recommended poultry keeping practices. Therefore, the obvious evidences regarding the adoption level is expected to make the extension agents and various agencies working in the field of poultry production and management aware about what ought to the recommended practices. Hence, the findings about adoption level of recommended poultry keeping practices would assist both governmental as well as private agencies working in the field for augmenting the adoption level where it would be at the very lowest level.

The present study has also a cursory look on the constraints encountered by the poultry farmers in sustaining with the vocation of poultry farming. Knowledge of such obstacles with their magnitudes which “put shackles on” in the adoption of recommended poultry keeping practices would be of immense help to devise a plan of action for the concerned departments, SAUs, Directorate of Extension and; top ranking policy makers and administrators to ease them.

LIMITATIONS OF THE STUDY

In spite of the usual limitation of time and funds of a student research project, maximum possible care was taken to make the study as objective as possible like any other students research project, this study suffers from some of the following limitations.

1. The data were collected from only 200 organized poultry farmers in Jaipur district. Hence, the findings of this study would be applicable only to the area under study. Nevertheless, the findings may be generalized in the areas having similar condition.
2. The findings of this study are based on the verbal expressions of the respondents. Therefore, the findings are conditioned by the extent of realizable and valid information provided by the respondents sole cited for the purpose of the investigations.
3. Due to limited time, the researcher could not include more independent variable for better assessment of their contributions towards knowledge level and adoption of improved poultry farming practices.

Chapter-2

REVIEW OF LITERATURE

A comprehensive review of literature forms an integral of any scientific enquiry. It is necessary for the researcher to acquaint himself with the work done in past to delineate the important problem means. According to Singh (1967) the main function of review of literature is to determine what work, both theoretical and empirical, has been done previously, assist in the delineation of the problem area, provide a basis for theoretical framework, provide insight into methods and procedures, suggest operational definitions of major concept and provide a basis for interpretation of the findings.

With this understanding in mind the literature pertinent to the problem has been review in light of the objectives of the study. It has been presented under the following sub-heads :

1. Studies pertaining to the knowledge level of the poultry farmers regarding recommended poultry farming practices.
2. Studies related to the extent of adoption of recommended poultry farming practices by the farmer.
3. Studies depicting the contribution of poultry farming in the overall economy of the poultry farmer.
4. Studies reflecting the constraints responsible for adoption of recommended poultry farming practices.

2.1 Studies pertaining to the knowledge level of the poultry farmers regarding recommended poultry farming practices.

Dixit and Narwal (1991) reported that the mean knowledge score about artificial insemination with respect to farmers of adopted villages was higher than their counterparts of non adopted villages.

Singh (1994) found that maximum farm women had high and medium level of knowledge in various animal rearing activities. All the categories of respondents had high knowledge score in management activities.

Singh (1994) reported that the composite knowledge of the farmers regarding breeding, feeding, A.I., pregnancy diagnosis, right time for insemination after onset of heat, practice of allowing new born calf to suckle, feeding extra concentrate mixture to a pregnant cow, vaccination, deworming, method of milking and clean milk production was very low.

Subramanian (1994) reported that small and big farmers of the less successful societies and more successful societies differed significantly from the control. The small as well as big farmers of the more successful societies groups possessed significantly high level of knowledge than the less successful societies group.

Dana *et al.* (1995) found that majority of the respondents (43 per cent) were having low level of knowledge where as, 38 per cent had medium level of knowledge and only 19 per cent possessed high level of knowledge about poultry health control measures.

Nishi (1996) reported that knowledge index was 72.31 and 55.02 per cent among beneficiaries and non-beneficiaries, respectively. Highest knowledge index (K.I.) was found in feeding and minimum (K.I.) in breeding between beneficiary and non beneficiary respondents.

Sapkota and Ray (1997) reported that students exhibited a growing interest in poultry training programme to enrich their knowledge level. Further, they construed that farmers having small size farms were more interested for training programmes probably to expand their knowledge on poultry farming.

Bhatti *et al.* (1997-98) revealed that the majority of the trained farmers (61.00 per cent) belonged to the category of high level of knowledge where as, about three-fourth (76.00 per cent) of the untrained farmers belonged to the medium level of knowledge category. Trained farmers had significantly more knowledge of improved practices than the untrained farmers.

Chauhan and Rathore (1997-98) revealed that majority of (56.67 and 57.33 per cent) of the small peasants had low level of knowledge regarding modern practices. Very few (11 and 22 per cent) had high level of knowledge.

Hingu and Patel (1997-98) found that majority of farmers (66.67 per cent) had medium level of gain in knowledge.

Kavad *et al.* (1997-98) found that majority of members (65.96%) possessed medium level of knowledge followed by 31.91 per cent of respondents who had high level of knowledge while

majority (68.33%) of non-members were found to be in the category of medium level of knowledge followed by 34.04 per cent respondents with low level of knowledge.

Patel and Acharya (1997-98) found a greater percentage of participant farmers in higher knowledge group (68.00 per cent) compared to non-participant farmers (12.00 per cent). The medium knowledge group includes 28.00 per cent of participants and 78.00 per cent of non-participants farmers. Whereas, 4.00 per cent of participants and 10.00 per cent of non-participant farmers were in the low knowledge group. In high knowledge group, only participant farmers were dominated while in medium and low knowledge group, non-participant farmers dominated.

Sharma and Intodia (1997-98) concluded that tribal farmers significantly gained in terms of knowledge after attending training programme.

Meena (1998) reported that out of a total of 79 respondents, 36 (45.57 per cent) non tribals and 43 (54.43 per cent) tribals were observed having medium knowledge about improved practices of animals husbandry.

Sapcota and Ray (1998) revealed that majority of the respondents i.e. 69 per cent had the lowest level of awareness regarding poultry keeping. It was followed by 22 per cent of them having medium and only 9.00 per cent had the high level of awareness regarding poultry keeping.

Podikunju *et al.* (1999) found that the majority of respondents (61 per cent) with regard to knowledge about livestock management practices fell in the medium knowledge while 14 per cent respondents possessed poor knowledge and only 25 per cent could be placed under high knowledge group. She also reported that maximum knowledge gap was in breeding which was 70.82 and 60.55 per cent in tribal and non tribal respondents, respectively.

Rohilla *et al.* (2000) found during their investigation in Nagaland that only 30 per cent poultry farmers were aware of improved poultry rearing practices.

Sharma *et al.* (2000) found that about 58.5 per cent of the poultry farmers had knowledge about balanced ratio i.e. about minimum requirement of crude protein.

Khandekar and Sharma (2000) revealed that majority of the farmers were aware of the fact that the poultry birds are to be fed different rations at different ages and for different breeds.

Parkash *et al.* (2000) found that caging and disease management aspects were quite unknown to the poultry farmers.

Kandian *et al.* (2001) found that a large number of women were engaged in training on poultry. A significant gain in knowledge was found and some socio-personal traits of women like education, mass-media exposure and social participation were found significantly related with gain in knowledge.

Sankhala and Sharma (2001) elucidated that majority of the

respondents (76 per cent) had medium knowledge level with an average knowledge score of 27.31. About 14 per cent of them had low knowledge level with an average score of 18.85. Only 10 per cent had high level of knowledge with an average knowledge score of 36.80 in proper marketing of eggs and chicks.

Awasthi *et al.* (2002) revealed that 31 respondents (38.75 per cent) were having medium level of knowledge 22 and 27 respondents (33.75 and 27.50 per cent) possessed high and low level of knowledge respectively.

Pyasi *et al.* (2002) reported that out of the total rural respondents, 40 per cent had low scientific knowledge followed 41.67 per cent having medium and 18.33 per cent high scientific knowledge respectively. In case of urban respondents, 13.33 per cent had low scientific knowledge followed by 48.34 and 38.33 per cent having medium and high level of scientific knowledge about litter management in poultry.

Sharma and Saini (2003) analyzing the knowledge scores of the respondent, found that the maximum number of respondents (78.0 per cent) had medium knowledge about all the three selected areas and only 16 per cent and 6 per cent of respondents had low and high knowledge score, respectively.

Paul and Sharma (2004) reveal that most of the poultry farmers had medium level of knowledge of recommended poultry keeping practices. This was found by nearly 30 per cent of the respondents with low and 20 per cent of them with high level of

knowledge. On an average, there was more than 50 per cent knowledge gap regarding the scientific rearing and management of poultry in the study area.

Kaur *et al.* (2006) revealed that in the area of management maximum number of members (64.17 per cent) had medium level of knowledge, whereas, 20.83 per cent and 5 per cent members belonged to high and low level of knowledge categories regarding dairy farming management practices, respectively.

Sharma *et al.* (2009) concluded that the dairy farmers has maximum knowledge about cleanliness and height of buffalo shed. However, poor knowledge was recorded in the area of disinfection of shed before calving followed by precaution needed after the expulsion of placenta.

Jat and Yadav (2012) revealed that knowledge level of registered big poultry farmers, 42 respondent (64.62%) were having medium knowledge whereas, 12 (18.46%) and 11 (16.92%) of respondent, were having high and low knowledge respectively about recommended poultry farming practices.

Jiji and Vijayan (2012) revealed that majority of the respondents (41.07%) high knowledge of poultry farming. However the number of respondents in the medium knowledge category (39.29%) was more than that of low (19.64%) poultry farming practices.

Bhuyian *et al.* (2013) reported that the highest proportion (57 percent) of the farmers possessd medium knowledge, 29 percent

low knowledge and lowest proportion 14 percent possessed high knowledge, about the farmers' knowledge of poultry production.

Ram and Meena (2015) revealed that among the member dairy farmers majority of them (58.34%) possessed medium knowledge level followed by high (26.60%) and low (15.00%) knowledge level, respectively. In improved dairy farming practices whereas, in case of non- member dairy farmers, majority belonged to medium knowledge level (76.68%) followed by low (16.67%) and high (6.67%) knowledge level respectively.

Paonam and Ram (2015) reported that majority (65%) of the respondents possessed medium level of knowledge about selected poultry husbandry practices. Poultry farmers had high level of knowledge regarding poultry housing (39.17%), brooding (37.17%) and feeding (42.50) practices. The respondents were found to have medium level of knowledge about poultry watering (47.50%) and vaccination (60.83%) practices. All the respondents did not practices debeaking and deworning practices. Majority (60.83%) of the respondents were using scientific equipments and their poultry farm.

2.2 Studies related to the extent of adoption of recommended poultry farming practices by the farmers

Meena (1993) observed that the overall extent of adoption was found to be 47.39 per cent. Adoption was found to be maximum in the area of fodder production, while it was least in health care.

Meena (1994) found that majority (80%) of the tribal woman had medium level of adoption whereas overall adoption was found to be 53.62 per cent.

Sharma (1990) reported that in general (63.10 per cent) livestock keepers were in the medium adoption group and 21.30 per cent respondents in the high adoption group while only 15.60 per cent were in the group of poor adopters.

Anonymous (1994) revealed that due to gap in adoption of technology, small scale poultry farming has not flourished as it should. The estimates show that only 1/5th of the technology has been utilized in the villages benefiting only 1/10th of the population. Apart from the number of practices adopted, the level of adoption of poultry technology also health.

Chug (1995) in his study observed that majority of the farmers (67%) were in medium adoption level followed by high adopters (17%) and low adopters (16%). Overall adoption was highest in case of feeding (83.49%) followed by health care (64.08%), management (62.33%) and breeding practices (49.11%).

Khati and Kumar (1996) analyzed the methods generally adopted in the brooding of chicks and suggested that whatever method is adopted to generate heat in brooding operation, it must be kept in mind that the ambient temperature also plays a significant role.

Mahapatra (1996) located about 1,00,000 farms of varying flock sizes ranging from 5-250 poultry birds in rural areas which had

adopted backyard or semi-backyard system of poultry keeping in feeding.

Mahapatra (1996) revealed that most of the private breeding companies have developed collaborative arrangements with parent organizations from abroad. As a result of these arrangements, they not only receive the improved genetic stocks for use in their breeding programme but also breeding technology to be adopted to bring about further improvement. He further reported that quail egg is small in size, wide acceptability of its egg and meat by all sections of society makes it an excellent species to be adopted by the small and marginal farmers, landless labourers and other rural poor for improvement of their socio-economic status.

Nishi (1996) concluded that majority of the respondents fell under medium level of adoption of IDFP. In case of beneficiaries, adoption index was 74.25 per cent, while in case of non beneficiaries it was 53.42 per cent.

Sah (1996) reported that overall extent of adoption was 23.60 per cent which could be considered as very low. Minimum extent of adoption was in case of breeding and maximum extent of adoption was in case of feeding practices.

Sihag *et al.* (1996) in their study reported that for feeding practices, 63.33 per cent of the total respondents fell under moderately good category of adoption and 36.67 per cent under moderately poor category of adoption.

Verma (1996) opined that the tremendous increase in poultry production had been owing to the adoption of improved intensive production system.

Bhatt *et al.* (1997-98) revealed that more than half of the trained farmers (52.00%) were found in the category of high level of adoption. While in case of untrained farmers, about 2/3rd (64.00 per cent) of them belonged to medium level of adoption category. Trained farmers had significantly higher adoption of improved practices than the untrained farmers.

Jagadeeshawara *et al.* (1997-98) found that different categories of farmers viz. small, marginal and SC/ST differed in their extent of adoption.

Kavad *et al.* (1997-98) revealed that majority of the member farmers had medium level of (68.83 per cent) adoption, followed by high level of adoption (32.98 per cent). Whereas, majority (65.96 per cent) of non-members fell under the medium level of adoption, followed by low level of adoption (31.91 per cent). They found a significant difference in the adoption between members and non-members respondents.

Mathiyalagan (1997) after studying the extent of adoption of poultry practices by the farmers revealed that the practices like disinfection, feeders space, watering space, balanced ration, lighting, litter management, vaccination, debreaking and deworming were adopted by almost all the respondents whereas, the housing and floor space were not adopted by nearly two-third (2/3rd) of the

respondents. The least adoption was found with respect to the practice of culling (32 per cent) followed by housing (14.64%).

Mundhwa *et al.* (1997-98) reported that nearly three-fourth (68.33 per cent) of the respondent farmers had medium level of adoption. Remaining 8.34 per cent and 23.33 per cent of respondent farmers had respectively low and high level of adoption respectively.

Patel *et al.* (1997-98) revealed that majority of respondents (63.75%) had medium extent of adoption followed by low (23.75%) and high (12.50%) extent of adoption.

Patel and Acharya (1997-98) reported that majority of the participant (76.00%) and non-participant (82.00 per cent) farmers were in the medium adopter group. The high adopter group consisted of 24.00 per cent of the participant farmers as against 12 per cent of the non adopter farmers. Whereas, 6.00 per cent non-participant farmers were in low adopter group. The difference in percentage between the participant and non-participant farmers of adoption also revealed that in high adoption group only participant farmers dominated while in the low and medium adoption group, non-participant farmers dominated.

Meena (1998) reported that out of a total of 70 respondents, 47.14 per cent and 52.68 per cent non-tribals and tribals, respectively were observe in the category of medium level of adoption.

Podikunju (1999) concluded from the results that tribal farm

women had maximum adoption gap *i.e.* 91.20 per cent in the area of breeding and it was ranked first, followed by health care and hygiene, feeding and milking.

Podikunju (1999) in her study observed that in general 57 per cent livestock keepers were in the medium adoption group and 28 per cent were in the high adoption group while, only 15 per cent were in the group of poor adopters.

Chauhan and Siddharth (1999-2000) while studying the consequences of personality traits of poultry enterprises on adoption of modern practices found that almost half of the poultry entrepreneurs (47.50 per cent) had high level of adoption of modern practices of poultry enterprise. This was followed by 33.75 per cent having low and 18.75 per cent having medium level of adoption of modern poultry keeping practices.

Intodia and Mathur (1999-2000) found that the technologies that required purchased inputs were less adopted due to poor economic conditions of the farmers and suggested technology assessment and refinement in view of local conditions.

Mundhwa and Patel (1999-2000) found that nearly two-third of the respondents (63.33 per cent) had medium level of adoption. Whereas, 16.67 per cent and 20 per cent of them had high and low level of adoption in poultry keeping practices.

Patel *et al.* (1999-2000) reported that 77.50 per cent of the respondents had medium level of adoption. There were 12.50 and 10.00 per cent of the respondents who had low and high level of

adoption about balanced diet.

Patel *et al.* (1999-2000) revealed a greater degree of technological gap in different recommended practices of poultry keeping. The extent of technological gap in all practices ranged from 19.89 to 46.83 per cent. The maximum gap was observed in feed management followed by health care. On the basis of their findings they concluded that over three-fourth (75.71 per cent) of the poultry farmers had medium technological gap in adoption of poultry farming practices. Though technological gap was low in some of the aspects, the business being very sensitive to the market, for keeping profitability intact, the entrepreneur shall adopt all the recommended technologies at their farm.

Nair and Ghadoliya (2000) reported that 85.82% of the total farmers had adopted large sized farms structure and concluded that the farmers who had adopted large sized farms had been making more profits as compared with medium and small group farmers.

Sharma *et al.* (2000) found that majority of the poultry farmers practiced all in-all out system (67 per cent) and on an average 5.25 batches in a year. All the farmers had adopted deep litter system for rearing broilers and provided recommended floor space (about 900 sq.cm /bird). For litter, they had adopted saw dust (72.5 per cent), rice-husk and sand. Most of the farmers got vaccinated against Ranikhet and Gumboro diseases. For feeding, they had adopted semi-automatic type of feeders (65.5 per cent). Commercially compounded feed was found to be used by them to an extent of 40 per cent.

Singh and Chahal (2000) revealed that none of the farmers among different categories had adopted extra feed supplements. The farmers preparing their home feed were not found adopting the practice of feed pre-mix preparation. The poultry farmers purchased the ready made feed in the forms of mash by spot purchase (80 per cent) and only 20 per cent adopted purchase through quotation. Majority of the farmers (76.67 per cent) had not adopted the practice of fumigation, 18.33 per cent used other chemicals and 5 per cent adopted physical methods for the control of insects and pests in feed godown. Regarding vaccination 73.33 per cent performed fowl-pox, 53.33 per cent Ranikhet disease, 90 per cent Gumboro, and 53.33 per cent CRD, coxy and lecchy vaccination.

Goswami (2001) while studying chick rearing practices adopted by the poultry farmers in Kolasib district of Mizoram revealed that only 5 per cent of the sampled poultry farmers had adopted improved farming practices.

Jiterwal (2003) found that in general (63.10 per cent) corss-bred rearers were in the medium adoption group and 21.30 per cent respondents in the high adoption group while only 15.60 per cent were in the group of poor adopters.

Paul and Sharma (2004) revealed that nearly one-fifth of respondents had medium and low levels of adoption of advocated poultry keeping practices.

Rahman *et al.* (2005) observed that the majority of the respondents (51%) adopted the improved dairy practices partially

whereas 39 and 10 per cent of respondents were found under non adopter and full adopter categories, respectively.

Thorat (2005) found that great majority (70.00 percent) of the poultry entrepreneurs were found with medium level of adoption of poultry management practices, followed 15.45 percent with high and 14.55 percent with low level of adoption of poultry management practices.

Meena *et al.* (2007) reported that respondents had poor adoption of practices like castration, weaning, deworming and vaccination against common diseases like H.S., F.M.D. and B.Q. Only 22 per cent buffalo keepers adopted the practice of full hand milking. Majority of the respondents had also not adopted the correct practice of disposal of animal waste. The respondents scored highest in management (48.77 MPS) followed by feeding (45.70 MPS) and breeds and breeding (35.14 MPS) aspect.

Jat and Yadav (2009) observed that 53.85 per cent of the big farmers were found to have medium adoption about the recommended poultry farming practices. While, 26.15 per cent big farmers were found to have low adoption, whereas 20.00 per cent farmers were found to have high adoption of recommended poultry practices.

Ithika *et al.* (2013) reported that the farmers with smaller flock size are poor adoption of technology. In case of small category farmers, a majority of respondents reported low level of adoption of the respondents from medium category, and equal number had

adopted low, medium and high level of practices. Almost all the large category farmers reported a high level of adoption.

Lohakare *et al.* (2015) reported that majority of respondents *i.e.* 75.72 percent were in medium category with respect of their level of adoption of animal husbandry practices, followed by high level of adoption 15.24 percent and 9.04 percent in low level of adoption. The practice wise adoption showed that health care practices (43.49%) were fully adopted followed by clean milk production (38.01%), calf rearing (31.20%), management (30.28%), breeds and breeding (23.74%), feed (20.85%), housing (12.55%) and marketing (6.66%). The least adoption as for insurance practices (3.09%).

Lohakare *et al.* (2015) reported that majority of member respondents (79.17 percent) were in the medium adoption group and 12.50 percent member in the high adoption group, whereas only 8.33 percent member were in the group of low adoption, whereas majority of the non-member respondents (81.95 percent) were in the medium adoption group while, 9.75 percent non-member in low adoption group and only 8.33 percent of non-member were in the high adoption group.

2.3 Studies depicting the contribution of poultry farming in the overall economy of the poultry farmers

Swaroop (1992) analyzed the data collected from National Accounts Statistics for the period 1970 to 1980. He reported that the structure of livestock population has been changing over time,

mainly due to greater emphasis on livestock development in anti poverty programme. Among the milch animals, the buffaloes have experienced proportionately more growth in their number than the cows. He further reported that milk and milk products constituted about $2/3^{\text{rd}}$ of the livestock income which has almost remained unchanged during the period and the contribution of meat and meat products remained stagnant at 13.34 per cent during the period of 1970-80.

Singh (1994) conducted a study "Economics of poultry farming in Haryana" categorizing poultry farms into small, medium and large. To analyse the profitability aspect, a number of measures of commercial efficiency were employed. As far as net return per bird is concerned it was found to be Rs. 0.42, 0.99 and 1.47 on small, medium and large sized farms, respectively.

Vijayaraghavan (1997-98) found that more than 80 per cent of the poultry farmers had expressed economic gain and prior income as major factors influencing entrepreneurship. Among the technological factors, guidance from private agencies was expressed by cent per cent of the farmers.

Chaudhary *et al.* (1999) reported that the average economic contribution from dairying as perceived by the respondents of different categories was 17.24 per cent, 13.57 per cent and 40.13 per cent of the gross income from all sources in case of small, medium and big categories of herd owners, respectively.

Podikunju (1999) reported that average economic contribution from dairying as perceived by the respondents was 49.86 and 59.95 per cent of the gross income from all sources in case of tribal and non-tribal respondents, respectively.

Mathur (2001) reported that the average economic contribution of cattle rearing as perceived by the respondents of different categories were 23.17, 32.23 and 47.10 per cent of the gross income from all sources in case of small, medium and large category of herd owners, respectively.

Anonymous (2003) it has been recognized that poultry industry as one of the growth engines for the Indian economy the processed poultry meat constitutes a poultry 5 per cent of the total poultry meat consumption in the country. Egg powder manufactures consume to the extend of 1 per cent of total egg production in the country.

Behra and Banja (2005) reported that a maximum of Rs 4000/- and minimum of Rs. 3000/- profit per month can be earned by rearing of 2000 Hubbard / vencob strains of chicks from private hatcheries through feeding gold star/hindita/ godrej/broiler feeds available in the broiler farm. Hence, economic feeding, timely vaccination and scientific management practices should be followed in the farm to get more dividends from the enterprise.

Belsare et al. (2007) reported that India has about 286.54 million bovine population of these only 16% cattle and 31% buffalo are milking while rest are non-milking. From these about 3.44 million

ton dung is available per day. About 25 kg cattle dung is required to produce 1.0 m³ of biogas, which can substitute about 4-5 kg of wood, or 0.62 litre of kerosene or 0.4 kg of LPG. Biogas can achieve a thermal efficiency of 60% compared to the 11% that is achieved from cattle dung cake burning.

Thirumurugan and Singh (2007) reported that India poultry an enormous indigenous bovine population, contributing to the organic manure, which is an essential feature of organic farming in view of its ability to maintain long-term soil productivity, thus ensuring to get rid of expensive and hazardous chemical fertilizer application which has become a serious health hazard in western developed countries as well as in many Asian countries.

Rao and Natchimuthu (2007) reported that livestock rearing is an important secondary occupation, which supplements their income and its contribution to GDP was estimated at 5.4%.

Sharma (2007) pointed out that considering 209 million cattle and 92 million buffaloes about 1095 million metric tonnes of dung is being produced in the country per year. Use of dung as fuel can save or earn a sum of about Rs. 109.5 billion per year, while as manure it saves Rs. 78.5 billion per year. The use of dung as FYM can save a sum of Rs 241 billion while its use as vermicompost can save a sum of Rs 3078 billion per year besides providing a number of micronutrients, humans, humus acid and ulmic arid which are responsible to maintain the fertility, texture, structure and water holding capacity of soil at a very cheaper rate.

Metha (2008) stated that the contribution of livestock sector to Indian GDP accounts for more than 1/3rd of total 32 per cent share from agriculture sector. As per current estimates animal sector contributes over Rs. 180,000 crores annually and more than Rs. 500 crores per day of national GDP. India is the largest producer of milk in the world. Milk and milk product alone accounts for about 66 per cent of total value from livestock sector. Women contribute about 70 per cent of work force in dairy sector. There are 75 million women as against 1.5 million men in dairying.

Pandey and Grover (2009) reported that beneficiaries and nonbeneficiaries of women dairy cooperatives though have similar socioeconomic profile but differ widely on entrepreneurial traits. The driving force of high satisfaction are high affiliation, economic self actualization, achievement, power and entrepreneurial motivation. Rural women find dairying as an economically profitable enterprise and therefore have enterprise satisfaction.

Singh *et al.* (2010) result shown that the total fixed investments per bird have been highest on small farms, followed by medium and large farms. The total variable cost per bird has been reported highest on small farms, followed by medium and large farms. The total cost of meat production per bird has been found highest on small broiler farms, followed by medium and large farms.

Abdallah and Khraisat (2013) reveled that the business is adopted as major source of income; however, most of the commercial poultry farms have been closed due to lesser profits and even heavy losses during last few years. Majority of poultry farms

(39.80 %) are small farms and the farmers are forced to rely on non-institutional source of credit. Seasonal and cyclical price fluctuations in input and output are found higher. Poultry producers are major stakeholders having no role in price fixation. The estimated input output ratio of poultry production is 1:1.39 (in winter) and 1: 1.75 (in summer) without marketing costs as they are added to the live weight sold to the consumer per kilogram live weight , which is estimated 0.15 to 0.2 JD / kg . The per rupee return does not look promising for investors of this sector especially in case of small farmers who are unable to reap the benefit of economy of scale.

Balamurugan and Manoharan (2013) shown that the total fixed investments per bird have been highest on small farms, followed by medium and large farms. The total cost of meat production per bird, returns per bird over the variable costs has been found highest on small broiler farms, followed by medium and large farms. On the basis of net present value, and internal rate of return, investment in broiler farming has been found profitable in all farm-sizes, it being most profitable on large farms, followed by medium and small farms.

2.4 Studies reflecting the constraints responsible for adoption of recommended poultry farming practices

Khan (2000) opined that there is lack of facilities to test the vaccine efficiency in the country, spot analysis of viral infection to identify threat of immuno-suppressive agents, needs further pondering morbidity status of flock due to sub-clinical infections like

that of New-castle, Infectious Bronehitis, Mareek's and Leucosis are still in prevalence.

Khandekar and Sharma (2000) found that the major problem in small scale rural poultry farming is that the farmers are not aware of the practices to be followed. The exotic breeds are being reared in backyard with no inputs or low input. Such birds are susceptible to diseases and have low productivity in the backyard.

Kumar *et al.* (2000) revealed that technological constraints, marketing constraints, general constraints, storage constraints and financial constraints were the major constraints perceived by the respondents in decreasing order of their magnitude with MS 13.50, 13.47, 10.80, 8.54 and 7.80 respectively.

Narinder Reddy *et al.* (2000) found that the constraints perceived by the respondents ranged from 7.89 to 84.21 per cent in case of women and 19.96 to 90.24 per cent in case of men. They responded in high proportion to the constraints like non remunerative prices, lack of training facilities on management and live stock health.

Nath *et al.* (2000) reported that in rural conditions, the veterinarians are always over-burdened with clinical cases as well as farmers are also unable to give actual case history.

Prakash *et al.* (2000) reported that lack of knowledge (43 per cent), lack of governmental and institutional support (25.45 per cent) and unorganized marketing sector (18.25 per cent) were the major

causes behind traditional poultry rearing.

Ramanna *et al.* (2000) revealed that the main constraints faced by the respondents were labour scarcity (60%), high input cost (56%), lack of quality feed, the company delay in payment (54%) and power failure (20%).

Shashi *et al.* (2000) revealed that lack of scientific management, inadequate veterinary services and absence of locally adaptable breeds were the main problems faced by the respondents.

Singh and Chahal (2000) while analyzing the constraints of poultry farmers opined that feeds and feed ingredients, feed plant machinery, vaccines and feed supplements were very costly and simultaneously their quality was not ensured. The availability of good quality feeds and feed ingredients in local market was very poor and no quality checks were made from any government agency. Further, relevant package of practices or related literature from proper guidance and education was not available.

Sharma *et al.* (2000) disclosed that the main reasons for not using compounded ration by the poultry farmers were high cost, lack of trust in feed quality and poor perception of quality.

Banerjee and Talukdar (1997) divulged that a majority of the entrepreneurs (50%) faced less number of problems while 35 per cent faced a moderate number of problems. Only 15 per cent of the selected entrepreneurs faced greater number of problems.

However, 10 per cent of them had not met with any problem at all.

Ghosh and Chand (2001) after analysis of the constraints of different types disclosed the dominance of economic constraints followed by infrastructural constraints. The technical and socio-psychological constraints were next in the order of importance. Except large farmers who were well endowed, small and marginal farmers experienced multiple hindrances which they suggested could be easily nullified by a careful effort of development personnel.

Goswami (2001) reported that the main constraints faced by the poultry farmers were non-availability of improved breed poultry birds, high cost of one day old chicks and high cost of market-feeds.

Kumar and Satpathy (2001) reported that high cost of feed and disease control in poultry were the main constraints faced by the farmers in the water-shed area.

Paul and Sharma (2004) reported that technical as the most severe factors hampering the poultry industry whereas, here financial constraints has emerged as the prime constraints.

Khan and Chauhan (2005) reported that the major constraints perceived by pooled sample of big, small and marginal farmers in the adoption of new farm practices of animal husbandry were lack of knowledge of improved A.H. practices, lack of financial or material resources, poor irrigation facility to grow green fodder, high cost of

commercial concentrates and non-availability of veterinary health care services.

Jat and Yadav (2009) observed that the most important constraint perceived by the respondents were economic constraints followed by technological and marketing constraints. However, the least perceived constraints were social constraints.

Patil *et al.* (2009) observed that regarding technical constraints, 68.00 per cent of respondents opined to have inadequate knowledge of diseases, their prevention and control as their constraints, followed by 60.89 per cent respondents to have constraints as non-availability of A.I. facility and timely veterinary services, whereas, 56.89 per cent stated constraints as non-availability of veterinary hospitals.

Pushpa *et al.* (2010) found that lack of scientific knowledge in fodder cultivation was express as major constraint by most of the farmers (40.00 per cent) in rural area.

Dwivedi *et al.* (2011) found that lack of money, lack of information, high cost of transportation, lack of availability of veterinary doctors, lack of government and people support in creating the facilities in animal markets were major constraints perceived by majority of animal trader in animal welfare practices.

Umar *et al.* (2011) observed that the major constraints with respect to breeding were ill equipped A.I. services repeat breeding and lack of pedigree bull for natural services, followed by low genetic potential of local animals, poor knowledge of A.I. Services

and poor availability of resources to maintain superior breed to milch animals.

Ghasura *et al.* (2013) observed that the major constraints in poultry farming were lack of veterinary services, the high price of medicine and feed, lack of adequate long term credit facilities and fluctuating prices of poultry products.

Lohakare *et al.* (2015) observed that constraints of water shortage, scarcity of fodder, mortality due to contagious disease, non- availability of A.I. facilities, less milk price determination etc. were encountered by majority of cattle owners.

Chapter-3

THEORETICAL ORIENTATION

After going through the past research findings in the preceding chapter a basis for theoretical framework was formulated. It is the conceptual framework makes a research more meaningful.

It is essential that theoretical concept of the study must be made clear before generalizing the new concepts of the research studies. It also helps in developing sound scientific approach of the study. With this realization a separate chapter on theoretical framework has been included in the presented dissertation.

This chapter has been presented in to the following sub-headings:

1. Concept of knowledge
2. Concept of adoption
3. Concept of constraints
4. Concept of future prospects
5. Operationalisation of the terms and abbreviations used in the study
6. Derivation of research design
7. Derivation of hypotheses

1. Concept of knowledge

Rogers and Shoemaker (1971) while describing the model of the innovation decision process considered knowledge as a function or a state of the decision process when the individual is exposed to an innovation's existence and gains some understanding of how it functions.

According to Encyclopedia of psychology :

- (i) Simple knowledge, apprehension; perception.
- (ii) Complex knowledge, understanding
- (iii) Certain (*i.e* indubitable) apprehension or understanding”

“I conclude --- That the necessary and sufficient conditions for knowing that some is the case fact what one is said to know be true,

secondly one be sure of it, and thirdly that one should have the right to be sure. This right may be earned in various ways-----“

“The problem of knowledge-London”

- (iv) Accurate information
- (v) The relation between object and subject.

Theory of knowledge:

A collective term for philosophical theories which seek to explain the nature, mechanisms and value of cognition by studying the general relationship between subject and object, thought and world historically the first explanations dogmatic;

- (a) There is an object outside thought which is conceived by the latter (realism, idealism, rationalism, empiricism).
- (b) There is no object outside thought (phenomenalism).
- (c) If there is an object, it can not be known (scepticism).

Later explanations were critical. The question of the existence of object out side thought was 'replaced by an inquiry into conditions for cognition, which were looked for at its source' i.e. in the structure of the cognising or knowing' subject.

It could be said, therefore, that a complete working knowledge is very essential for proper adoption; Wilkening (1963) had observed that all types of decisions required technological knowledge of farming as well as of the farms and its operations.

Knowledge as a function or stage in the innovation decision process was recognized by Rogers and Shoemaker (1971). According to them, there are three types of knowledge related to innovations decision namely (i) awareness knowledge (ii) 'How to' knowledge (iii) Principle knowledge. This exemplifies the importance of knowledge in decision and adoption process. Knowledge has been defined as the awareness, extent and manner of the use of improved agricultural practice.

Knowledge is one of the important components of behaviour and it plays a major role in covert and overt behaviour of human beings. Once

knowledge is acquired, it produces changes in the thinking process of an individual which would lead to further changes in the mental aptitude.

In the present study, knowledge has been operationalised as a body of understood information about improved poultry production practices possessed by the respondents.

2 Concept of adoption

Researches on adoption of a new idea or practice by individuals or group of people have shown that adoption of a new idea is not a snap decision but a mental process on the part of an individual over a period of time. Adoption of a farm practice has been conceptualized as a process involving a number of successive stages by rural sociologists. One of the important contributions made by adoption of researches is the concept of sequential nature of adoption. Rural sociologists have come out with a number of conceptual propositions regarding the stage of adoption related to farm innovations.

Wilkening postulated that acceptance of innovation may be viewed as a function of social relations in an ideological system (ideas, values and sentiments) of farmers. One finds support of this view in the works of Copp and Rogers.

Wilkening (1963) rephrased the earlier version of adoption as a process composed of learning, deciding and acting over a period of time. The adoption of a specific practice is not the result of a single decision to act but of a series of actions and thoughts. Wilkening considered this process composed of four stages:

- (a) Awareness
- (b) Obtaining information
- (c) Conviction and trial and
- (d) Adoption

A committee of rural sociologist (North Central Rural Sociology Sub-committee, 1955) recommended the stages suggested by Wilkening (1963) with slight variations. The committee suggested five stages instead of four. These were:

- (a) Awareness
- (b) Interest
- (c) Evaluation
- (d) Trial, and
- (e) Adoption

Copp (1958) expressed that adoption of recommended farm practices has been conceptualised as a latent behavioural pre-disposition, which is manifested in the acceptance of specific recommended practices. Beal et al. (1957) attempted to validate the stages of :

- (a) Awareness
- (b) Information
- (c) Application
- (d) Trial, and
- (e) Adoption

Rogers and Shoemaker (1971) termed adoption as innovation decision process through which an individual passes from knowledge of an innovation to a decision to adopt or reject and later confirmation of this decision.

There are five functions in this process

- (a) Knowledge
- (b) Persuasion
- (c) Decision
- (d) Implementation and
- (e) Confirmation

Thus, it appears from the various studies on adoption that adoption is both a process involving some stages of decision making and a stage in the process where the farmers begin the full use of an innovation.

In the present study the term adoption is used as the degree of acceptance and use of improved poultry production practices by the respondents.

3 Concept of constraints

The simplest dictionary meanings of constraints (grammatically a noun) are; to compel, to force, to confine, to restrict the motion of a body or particle, to secure by bounds restrain to clasp tightly, to hold back up force, to violate, to strengthen, to oppress, to confine forcibly, to contract, to dress, to limit, to press, to bring in to narrow compass irresistible force, coercion, restriction of liberty, affliction, compulsion put upon the expression of feelings or behaviour as to have an air of constraints, the act of action of using force or threat of force to prevent or condition on action, the quantity or state of being checked, restricted to avoid or perform some action.

For the present study, in case of respondents it has been operationalised as the certain irresistible forces which may be technical, infrastructural, economic, marketing, social and other miscellaneous related to input and power supply operating singly or in conjunction with each other and impeding the utilization of recommended poultry farming practices.

4. Modalities for future prospects of improvement in poultry production

The modalities for future prospects have been conceptualised as the strategies/actions to be followed for overcoming the problems being faced by the poultry keepers in the areas of breeds and breeding, feeding and management as suggested on the basis of experiences/opinion of the personnel engaged in planning and implementation of the programmes on poultry development.

5. Operationalisation of the terms and abbreviations used in the study

Age

It refers to the chronological number of years of the respondent from the date of birth to the date of data collection

Education

It refers to the respondents' academic qualifications acquired through formal schooling.

Extension contact

The extension contact indicates that acquaintance as well as the frequency of contact with different extension personnel, viz., VEW, Dairy Supervisor, Livestock Assistant, Veterinary Assistant Surgeons, Agriculture Officer and specialists.

Breeding

It means population of desired type of offspring having desired traits in laying birds.

Feeding

It is referred to as feeding of poultry to achieve maximum production by keeping the poultry healthy.

Health care

It is referred to as prevention of poultry from diseases by control measures.

Management

It is the art and science of combining ideas, facilities, process materials and labour to produce and market a worthwhile product or service successfully.

Breed

A breed is a group of individuals of common ancestry which are genetically identifiable because all members of the breed possess certain common genes.

Concentrate

A concentrate is usually described as a feed or feed mixture which supplies primary nutrients (protein, carbohydrate and fat) at higher level but contains less than 18 per cent of crude fiber with low moisture. Example-grains and seeds, mill by-product and molasses.

Poultry farming practices

These practices include major heads like- breeds and breeding, feeding, watering and management (housing, laying and health care) and their aspects.

Adoption

It is a decision to make full use of new idea as the best course of action available. The term in the present investigation refers to the use of recommended practices of poultry broiler production either fully, partially and not at all.

Knowledge

A clear and certain perception of something the act, fact or state of knowing or understanding is called knowledge (Webster, 1958). Also, knowledge are those behaviour and best situation which emphasize the remembering either by recognition or recall of an idea or / and material on some phenomenon (Bloom *et al.*, 1955). In the present context, this term refers to the totality practices possessed by the respondents.

Constraints

Constraints in the present investigation may be defined as the impediments, obstacles or bottleneck, which “put shackles on” in the propagation of poultry production and management practices.

Caste

Caste is a social category whose members are assigned a permanent status with in a given social hierarchy and their contacts are restricted according (Lundberg).

Size of poultry unit

It is the 1000 of poultry a respondent reported rear at the same time in a similar lot.

The respondents were grouped into three categories on the basis of their poultry birds.

Category:

1. Small poultry farmers (below 1000 birds)

2. Medium poultry farmers (1000-2000 birds)
3. Large poultry farmers (above 2000 birds)

Sources - Poultry training centre Ajmer 2005)

Poultry unit

The poultry farmer which have 1000 birds are called poultry unit.

Interview

It essentially a conversation face to face carried out by a researcher with the respondents for getting his response schedule.

Schedule

Refers to a set of questions which are asked and filled in by an interviewer in a face to face situation with another person.

Brooder house

Is a small room/ compartment of bigroom or shed which can be heated by the centrally heating device or with any smokeless fuel system. Border is an alternate of mother hen.

Brooding

Is the process and practice of providing the requirement heat to the day old chicks by artificial heat arrangements. This practice is carried for 21 days.

Chick

Offsprings of poultry are known as a chick

Hatchery

The place where we have produced the chicks is called a hatchery.

Chick guards

To protect the chick from running away from the brooder house.

Community nest

When a nest provide for fire birds is called community nest.

Feeder

To offer the feed called feeder.

Nest box

Box provided to lay the eggs.

Waterers

To provided the water are called waterer.

Broiler

Broiler is a meat producing hybrid poultry bird improved strain or breed and includes both male and female birds. In the present investigation the term poultry means broiler.

Floor space

The space on the floor of poultry shed required for healthy growth of birds without any competition is termed as floor space.

Feeder space

The space required around the feeders for feeding birds in such a way that all the birds of a particular shed can feed at the same time is referred to as feeder space. The requirement of feeder vaccination space varies along with the increase in the age of birds.

Vaccination

Is administering vaccines to the birds in order to generate immunity in their bodies against various diseases.

Housing

The practice of providing safe accommodation to the poultry birds in which they can grow well is termed as housing.

Sanitation

Refers to the practice of keeping poultry shed and the surrounding clean to create hygienic condition.

Abbreviations

%	Per cent
A.H	Animal Husbandry
Ad.I.	Adoption Index
A.I.	Artificial Insemination
CV	Coefficient of Variation
d.f.	Degree of Freedom
<i>et al.</i>	(et alibi) And Also Where

fig.	Figure
i.e.	That is
IVRI	Indian Veterinary Research Institute
K.I.	Knowledge Index
M.S	Mean Score
MPS	Mean Per cent Score
RLDB	Rajasthan Livestock Development Board
SAU	State Agricultural University
SKN COA	Shri Karan Narendra College of Agriculture

6. Research design

According to Selltize *et al.* (1976), Research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure.

The research design helps the researcher in testing the hypotheses by reaching valid and objective conclusions regarding the relationships between independent and dependent variables.

For the present investigation, the Ex-post-facto design was used

The ex-post-facto design is that in which the events have taken place prior to undertaking the investigation. In this design, the investigator has no scope to manipulate the independent variables, as these have already occurred.

In fact, such studies can ensure availability of reliable data, only when sufficient time has elapsed for the variables to produce effects. For example, where people are participating in newly introduced programme, a period of about five years should elapse, before they could be selected as sample for studying impact of the programme. In ex-post-facto design, the treatment is determined not by manipulation but by selection in the present case.

Chapter - 4

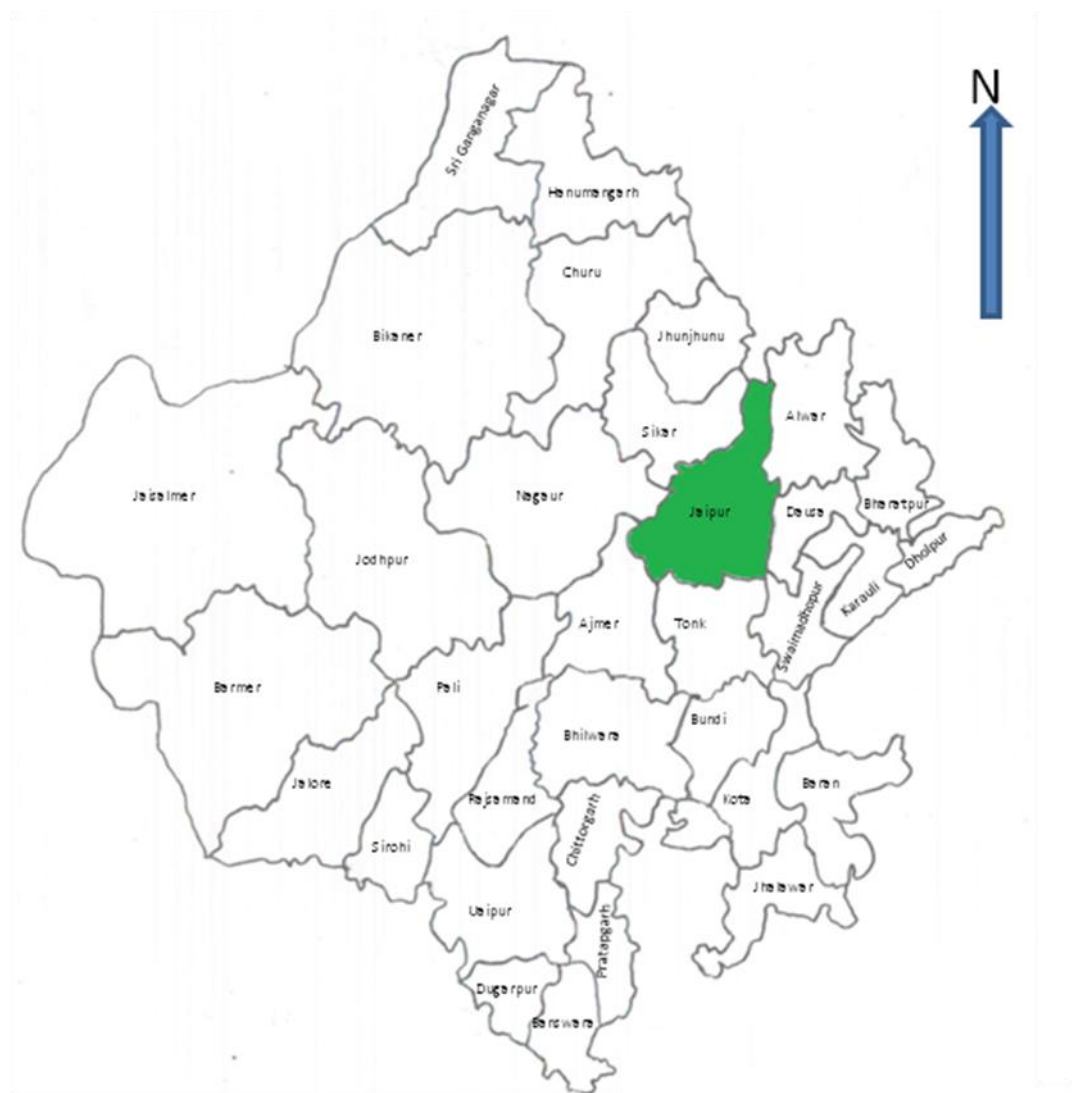
RESEARCH METHODOLOGY

This chapter of dissertation throws light on the adopted *modus-operandi* for achieving the objectives of the present investigation. Various methods and procedures employed to study the set objectives have particularly been discussed and the details thereof incorporated herein including methods and procedures followed in selection of locale and sample. Further, the method employed for collection of research data including design of research as well as statistical analysis are also discussed under this chapter.

The design and conduct of the study was developed according to the central purpose and nature of the specific objectives as outlined in the first chapter. Therefore, it was necessary to accomplish the following steps before data were presented in the study.

- 4.1. Locale of research and selection of sample
- 4.2. Collection of research data
- 4.3. Measurement of variables
- 4.4. Analysis of data
- 4.5 Statistical measures used

4.1. LOCALE OF RESEARCH AND SELECTION OF SAMPLE



 Selected district for the study

Fig. 1 Map showing locale of study area



Plate 3 : Feeding of chicks in brooder



Plate 4 : Storage of eggs



Plate 1: Feeding of chicks in chickyard



Plate 2: Chicks at waterer during watering

(i) Selection of district

The present investigation was conducted in Jaipur district of Rajasthan due to the following reasons :

- (i) Jaipur district has third rank under number of organized poultry farms among all the districts of Rajasthan.
- (ii) A poultry lab is also situated in the district.
- (iii) The directorate of animal husbandry is situated in Jaipur which facilitated in investigator in getting the study related secondary information.
- (iv) The state level directorate of Animal Husbandry is also situated in the district.

(ii) Selection of organized poultry farms

For selection of the respondent a list of (Livestock Census 2007) all the organized poultry farms was prepared, the number of these farms was 200 (Livestock census 2007).

(ii) Selection of respondents

All the owners of these 200 selected organized poultry farms were selected as respondents for getting responses for the study purpose, hence the data for the present study were collected from these 200 organized poultry farm owners.

4.2 Collection of research data

Keeping in mind the purpose of study and subjects included in the sample, the researcher selected interview method as the most appropriate and practical technique for collecting the required data. The final standardized interview schedule (Annexure-I) based on 30 experts opinion was used to ask the queries and their responses were recorded accordingly by the researcher himself on the spot in

the field situations. The interview method of data collection was preferred over other methods of data collection because of several added advantages. The interview technique provides a situation where face to face opportunities are available to explain the purpose and significance of the study and to clarify points, remove doubts and uncertainties and; motivate respondents to answer questions carefully and truthfully. Another advantage of this method is that there is cent percent surety of obtaining information.

4.3 Measurement of variables

This part of the chapter concerns with the measurement of various independent and dependent variables included in the study.

4.3.1 Measurement of independent variables

Age, education, caste, size of poultry unit, farming experience, social participation etc are the important personal characteristics of the respondents and also referred to as antecedent variables. The details of these variables with their respective measure are as under:

4.3.1.1 Age

On the basis of the reported age, the respondents were grouped into three categories using calculated mean age and standard deviation.

- (i) Young age
- (ii) Middle age
- (iii) Old age

4.3.1.2 Education

The respondents were grouped into 7 categories on the basis of their reported education.

- (i) Illiterate = Cannot read and write
- (ii) Primary = upto class 6th
- (iii) Middle = upto class 8th
- (iv) Matriculate = upto class 10th
- (v) Higher secondary = upto class 12th
- (vi) Graduate = B.A./B.Sc./B.Sc. (Ag.)
- (vii) Post graduate : M.A./M.Sc.

4.3.1.3 Caste

Considering caste, respondents were grouped as:-

- (i) Scheduled caste
- (ii) Schedule tribe caste
- (iii) Other backward caste
- (iv) General caste

4.3.1.4 Size of poultry unit

Three categories of the respondents were farmed on the basis of possession of unit:

- (i) Small farm =< 1000 birds
- (ii) Medium farm = 1000-2000 birds
- (iii) Large farm = > 2000 birds

4.3.1.5 Farming experience

Three categories were formed in the basis of number of years of engagement in poultry farming:

- (i) Low experience : < 2 years
- (ii) Medium experience = 2-5 years
- (iii) High experience = > 5 years

4.3.1.6 Occupation

This variable was quantified on the basis of the scoring system used in the socio-economic status scale of Trivedi (1963). The scores were assigned as under:

S.No.	Occupation	Score
1	Labour	1
2	Caste occupation	2
3	Agricultural/animal husbandry	3
4	Business	4
5	Service	5

4.3.1.7 Social participation

Social participation refers to the degree of involvement of a respondent in formal organization simply as a member or an office bearer. This variable was quantified as per the scoring system

followed in the socio-economic status scale of Trivedi (1963). The scoring was done as follows:

S.No.	Social participation	Score
1	Not member of any organization	0
2	Member of one organization	1
3	Member of more than one organization	2
4	Member of committee	3
5	Leader in organization	4
6	Public leader	5

4.3.1.8 Source of credit

This variable was measured categories the institutions from which the respondents took loans for cultivation as follows:-

- (i) Relatives
- (ii) Money lender
- (iii) Cooperative
- (iv) Commercial banks
- (v) Other

4.3.1.9 Proximity to market

It refers to the distance from village to market where are existing for sale and purchase of poultry products.

- (vi) Less than 1 km
- (vii) 1-5 km
- (viii) 5-10 km
- (ix) 10-20 km
- (x) Above 20 km

4.3.1.10 Size of land holding

On the basis of the reported land, the respondents were grouped into three categories as follows:

- (i) Landless = No land
- (ii) Marginal holding = < 1 ha
- (iii) Small holding = 1-2 ha
- (iv) Big holding = > 2 ha

4.3.2 Measurement of dependent variables

Dependent variables are those which for their value depend upon the value of independent variables *i.e.* these are presumed affect of the cause. Dependent variables in present study are knowledge, adoption, economic contribution and constraints. These are measured as under.

4.3.2.1 Measurement of knowledge level of farmers about improved poultry farming practices.

To measure the knowledge level of respondents, a knowledge test developed by Narender Paul (2003) was adopted with slight

modification like inclusion of various practices viz. vaccinations and management, record keeping and marketing along with increasing statements related to the practices of poultry farming and conversing the questions form after discussion with subject matter specialist of different poultry departments, Directorate of extension education R.A.U., Bikaner, and MPUAT, Udaipur, poultry department in veterinary college, Bikaner, poultry training centre, Jaipur, Animal Husbandry department Jaipur, Agricultural University S.K. Nagar, Gujarat, NDRI, Karnal, HAU, Hissar, IARI, New Delhi, poultry training centre, Ajmer, extensionists of department of extension education, S.K.N. College of Agriculture, Jobner but basic theme of questions was kept the same.

Thirty questions along with sub questions about improved poultry farming practices in Jaipur district were included to measure the knowledge level of the farmers and equal weightage was given to each question, assuming that all the items included were equally difficult to understand, apply and one mark was given to right answer and zero for wrong answer. The following formula was used to work out the knowledge index.

$$\text{Knowledge index} = \frac{X_1 + X_2 + X_3 + \dots + X_n}{N} \times 100$$

Where

$X_1, X_2, X_3, \dots, X_n$ are correct answer for first second and upto i^{th} question.

N = As the maximum possible score of the schedule.

The mean and standard deviation of the scores of all the respondents were computed for classifying the knowledge level in different categories based on the mean knowledge score and standard deviation. The farmers were categorized into three levels of knowledge *i.e.* low, medium and high based on mean and standard deviation. The categorization was done according to following considerations.

Low knowledge level = Score below (Mean knowledge score – Standard Deviation)

Medium knowledge level = Scores between (Mean knowledge score – Standard deviation to (Mean knowledge score + Standard Deviation))

High knowledge level = Scores above (Mean knowledge score + Standard Deviation)

4.3.2.2 Measurement of adoption

To measure the adoption by respondents, a adoption index developed by Narender Paul (2003) was adopted with slight modification like inclusion of temperature and light regulation and also increasing the statements of sub practices based on expert opinions and converted the questions form after receiving the response from subject matter specialists of different poultry departments, Directorate of Extension Education R.A.U., Bikaner and MPUAT, Udaipur, poultry department in veterinary college, Bikaner, poultry training centre, Jaipur, Animal Husbandry department Jaipur, Agricultural University S.K. Nagar, Gujarat, NDRI Karnal, HAU Hissar, IARI New Delhi, poultry training centre, Ajmer, extensionists of department of extension education, S.K.N. College of Agriculture Jobner but basic theme of questions was kept the

same.

To measure the extent of adoption, an adoption index was specifically prepared containing 10 important major practices of poultry production. To convert responses of the respondents into numerical data, the adoption index so formulated was quantified. This quantification was done keeping in view the responses i.e., adopted and not adopted at all and; scores of 1 and 0 were assigned to these responses, respectively. The adoption index was calculated as:

$$\text{Adoption index} = \frac{\text{Total adoption score obtained by the respondents}}{\text{Maximum attainable score}} \times 100$$

4.3.2.3 Economic contribution of poultry farmers

For economic analysis the procedure developed by Meena (2005) was adopted and it was calculated with the help of all components entering into the nucleus of cost viz., cost of feed, labour cost, miscellaneous expenses, fixed cost and land cost and total income received from poultry products i.e. income from egg and egg products, income from culled birds, income from manure, income from sale of birds, money value of product used in house. In every household, it was assumed that appreciation and depreciation cancel each other.

In order to study the contribution of poultry farmers of the farming system in the overall economic condition of the farmers, the income from poultry enterprise was estimated and expressed as the percentage of gross income from all sources. The estimate of income was worked out in following three ways.

(i) Perceived income (I₁)

It is the income from the poultry components as perceived by

the respondents.

$$I_1 = \frac{\text{Total Income from poultry components as perceived by the respondents}}{\text{Gross income of the family}} \times 100$$

(ii) Cash income (I_2)

The income which is estimated by adding all the cash receipts obtained from poultry enterprise i.e. from the sale of birds, sale of egg and egg products, poultry manure when expressed as the percentage of gross income of the family is called cash income.

$$I_2 = \frac{\text{Money received in case from the poultry enterprise}}{\text{Gross income of the family}} \times 100$$

(iii) Actual income (I_3)

It is the income obtained after subtracting the expenditure made on poultry enterprise from the cash income and expressed as the per cent of the gross family income.

$$I_3 = \frac{\text{Income from poultry enterprise} - \text{Expenditure on poultry components}}{\text{Gross income of the family}} \times 100$$

4.3.2.4 Measurement of constraints

To measure the constraints of respondents, a constraints schedule developed by Narender Paul (2003) was adopted with slight modification in forming the statements based on experts opinions. The modification was done in some statements of major constraints like Lack of knowledge about bio-security measures, shortage of feeding space and watering space, wastage of feed by birds, high mortality, no purchase of egg and meat by Govt. agencies, scarcity of balanced feed, low egg production of layers, high fluctuations in voltage in power supply, sale market at distant place and no minimum support price (for sale) by Govt.

To express the severity of bottlenecks perceived by the poultry farmers in quantitative manner, the instrument so framed was assigned score on a three points continuum on the basis of severe ness of response. Accordingly, scores 3, 2 and 1 were given to the most severe, severe and least severe responses made to the constraint statements, respectively, by the respondents and thus MS were calculated and ranks were assigned accordingly.

4.4 Analysis of data

The qualitative data gathered after conducting personal interviews with the respondents were converted into quantitative form. For this purpose, responses were transferred on talley sheet, given assigned scores and converted into numerical form. Prior to applying statistical tests, their sum totals were made and tables were framed.

4.5 Statistical measures used

Application of various statistical measures is the very first necessity to arrive at specific conclusions. The statistical measures used in the present study are:

4.5.1 Percentage

Simple comparisons were made on the basis of percentage.

4.5.2 Mean Per cent Score (MPS)

Mean Percent Score was obtained by dividing total obtained score by maximum obtained score and multiplying it by 100.

$$\text{MPS} = \frac{\text{Total obtained score}}{\text{Maximum obtainable score}} \times 100$$

4.5.3 Arithmetic Mean

It was obtained by dividing sum of values of observations by total number of observations.

$$\bar{X} = \frac{\Sigma X}{n}$$

Where, $\bar{X}$ = Arithmetic mean

$$\Sigma X = X_1 + X_2 + X_3 + \dots + X_n$$

$$n = \text{Total number of observations}$$

4.5.4 Z – Test

This test was applied to find out significance of difference between knowledge, adoption and constraints of Large, Medium and Small poultry farmers with respect to improved poultry farming practices. Formula used is as :

$$Z = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

where $\bar{X}_1$ = Mean of first sample

$\bar{X}_2$ = Mean of second sample

S_1 = Standard deviation of first sample

S_2 = Standard deviation of second sample

n_1 = Size of first sample

n_2 = Size of second sample

Formula used for calculating standard deviation is :

$$S.D = \sqrt{\frac{\Sigma X^2}{n} - \left[\frac{\Sigma X}{n} \right]^2}$$

Where, S.D = Standard Deviation

ΣX^2 = Sum of squares of observations

$(\Sigma X)^2$ = Squares of sum of observations

n = Number of observations

4.5.5 Rank

Items were awarded in the descending order according to the frequencies obtained. This was used to find out the knowledge, adoption and constraints of different categories of respondents *i.e.* large, small and marginal farmers regarding problems and prospects of recommended poultry farming practices in Jaipur district of Rajasthan.

4.5.6 Coefficient of variation

$$\text{C.V.} = \frac{\text{Standard deviation}}{\text{Mean}} \times 100$$

4.6 Computer analysis

The results of statistical analysis were obtained by running the data on computer in Microsoft Excel Software.

4.7 Derivation of the hypotheses :

According to lundberg (1975) "A hypothesis is a tentative generalization the validity of which remains to be tested". In its most elementary stage the hypothesis may be any hunch, guess, imaginative idea, which becomes the basis for action or investigation. Considering the importance of the factors selected in the study along with the reference to the objectives of the present investigation mentioned in chapter. The null hypotheses framed for this investigation are as follows:

1. Hypothesis related to knowledge of poultry farmers about recommended poultry farming practices.

Ho_{1.1} There was no difference between the knowledge of large and medium poultry farmers about the recommended poultry farming practices.

Ho_{1.2} There was no difference between the knowledge of large and small poultry farmers about the recommended poultry farming practices.

Ho_{1.3} There was no difference between the knowledge of medium and small poultry farmers about the recommended poultry farming practices.

2. Hypothesis related to adoption of poultry farming practices by the poultry farmers.

Ho_{2.1} There was no difference between the large and medium poultry farmers in adoption of recommended poultry farming practices.

Ho_{2.2} There was no difference between the large and small poultry farmers in adoption of recommended poultry farming practices.

Ho_{2.3} There was no difference between the medium and small poultry farmers in adoption of recommended poultry farming practices.

3. Hypothesis related to constraints perceived by the poultry farmers in adoption of recommended poultry farming practices.

Ho_{3.1} There was no difference between the large and medium poultry farmers in perceiving the constraints of recommended poultry farming practices.

Ho_{3.2} There was no difference between the large and small poultry farmers in perceiving the constraints of recommended poultry farming practices

Ho_{3.3} There was no difference between the medium and small poultry farmers in perceiving the constraints of recommended poultry farming practices.

Chapter - 5

RESULT AND DISCUSSION

This chapter highlights the findings regarding "Problems and prospects of recommended poultry farming practices in Jaipur district of Rajasthan" keeping in view the objective of the study, required information were collected from the poultry farmers and were analysed. The results and discussion are presented under the following heads:

- 5.1 Personal characteristics of the selected poultry farmers.
- 5.2 To assess the knowledge level of poultry farmers regarding recommended poultry farming practices.
- 5.3 To measure the extent of adoption of recommended poultry farming practices by the poultry farmers.
- 5.4 To measure the contribution of poultry farming in the overall economy of poultry farmers.
- 5.5 To identify the constraints as perceived by the poultry farmers in adoption of recommended poultry farming practices.
- 5.6 To explore the modalities for future prospects of improvement in poultry farming.

5.1 Personal characteristics of the selected poultry farmers

As far as the personal profile of the selected poultry farmers is concerned, eleven attributes were recorded and are presented as under-

5.1.1 Age of the poultry farmers

The data regarding the age of poultry farmers have been presented in table 5.1.1

The data in table 5.1.1 and Fig. 2 reveal that the age group of the poultry farmers, 157 (74.72 per cent) belonged to the middle age group of 38-50 years. The poultry farmers reported from the young and old categories were 36 (17.28 per cent) and 17 (8.00 per cent) respectively.

Table 5.1.1 Distribution of the poultry farmers according to age
n= 200

S. No.	Age	Category of poultry farmers						Pooled	
		Large		Medium		Small			
		f	%	f	%	f	%	f	%
1.	Young age (<38 years)	17	20.23	13	19.12	6	12.50	36	17.28
2.	Middle age (38-50 years)	59	70.24	48	70.59	40	83.33	147	74.72
3.	Old age (>50 years)	8	9.53	7	10.29	2	4.17	17	8.00
	Total	84	100.00	68	100.00	48	100.00	200	100.00

Mean= 54.44, $\sigma = 5.67$

f: Frequency,

?: Percent

Regarding the age group of large poultry farmers, 59 (70.24 per cent) were from middle age group. Whereas, 8 (9.53 per cent) were from old age and 17 (20.23 per cent) were from young age group.

Regarding the age group of medium poultry farmers, 48 (70.59 per cent) were from middle age group. Whereas, 7 (10.29 per

cent) were from old age and 13 (19.12 per cent) were from young age group.

Regarding the age group of small poultry farmers, 40 (83.33 per cent) were from middle age group. Whereas, 2 (4.17 per cent) were from old age and 6 (12.50 per cent) were from young age group.

5.1.2 Education of the poultry farmers

Regarding the education of the poultry farmers have been presented in table 5.1.2

The data in table 5.1.2 and Fig. 3 reveal that education of the poultry farmers, 26.60% were educated up to middle standard followed by 24.21% of them educated up to secondary standard. 16.51% of the poultry farmers were educated up to higher secondary standard, 14.11% educated up to primary level and 7.42% of them were illiterate. Only 6.93% of the poultry farmers were graduate and 4.25% of poultry farmers were post graduate and above.

Table 5.1.2 Distribution of the poultry farmers according to education n= 200

S. No.	Education	Category of poultry farmers						Pooled	
		Large		Medium		Small			
		f	%	f	%	f	%	f	%
1.	Illiterate	5	5.95	4	5.88	5	10.42	14	7.42
2.	Primary	13	15.48	14	20.59	3	6.25	30	14.11
3.	Middle	23	27.38	20	29.42	11	22.92	54	26.60
4.	Secondary	22	26.19	16	23.53	11	22.92	49	24.21
5.	Higher secondary	13	15.48	9	13.23	10	20.82	32	16.51
6.	Graduate	5	5.95	3	4.41	5	10.42	13	6.93
7.	Post graduate and above	3	3.57	2	2.94	3	6.25	8	4.25
	Total	84	100.00	68	100.00	48	100.00	200	100.00

f: Frequency, %: Percent

Regarding the education of large poultry farmers, 27.38% were educated up to middle standard followed by 26.19% of them educated up to secondary standard. 15.48% of the poultry farmers were educated up to primary and equal percentage were educated up to higher secondary standard, 5.95% were illiterate and equal percentage were educated were graduate. Only 3.57% of the poultry farmers were post graduate and above.

Regarding the education of medium poultry farmers, 29.42% were educated up to middle standard followed by 23.63% of them educated up to secondary standard. 20.59% of the poultry farmers were educated up to primary standard, 13.23% educated up to higher secondary standard and 5.88% were illiterate and 4.41% of them were graduate. Only 2.94% of the poultry farmers were post graduate and above.

Regarding the education of small poultry farmers, 22.92% were educated up to middle and equal percentage were educated up to secondary education standard followed by 20.82% of them educated up to higher secondary standard. 10.42% of the poultry farmers were illiterate and equal percentage were graduate standard. Only 6.25% of the poultry farmers were educated up to primary and equal percentage were post graduate and above standard.

5.1.3 Caste of the poultry farmers

Regarding the caste of the poultry farmers have been presented in table 5.1.3

The data in table 5.1.3 and Fig. 4 reveal that caste of poultry farmers, 73 (36.50 per cent) were belonged to the other backward caste. Whereas, 54 (27.00 per cent) were from general caste, 50 (25.00 per cent) were from scheduled caste and 23 (11.36) were from scheduled tribe category.

Table 5.1.3 Distribution of the poultry farmers according to caste

n= 200

S. No.	Caste	Category of poultry farmers						Pooled	
		Large		Medium		Small			
		f	%	f	%	f	%	f	%
1.	Schedule d caste	20	23.81	17	25.01	13	27.08	50	25.00
2.	Schedule d tribe	10	11.91	8	11.76	5	10.42	23	11.50
3.	Other backward caste	27	32.14	24	35.29	22	45.83	73	36.50
4.	General caste	27	32.14	19	27.94	8	16.67	54	27.00
	Total	84	100.00	68	100.00	48	100.00	200	100.00

f : Frequency, %: Percent

Regarding the caste of large poultry farmers, 27 (32.14 per cent) were from general caste and equal percentage were from other backward caste. Whereas, 20 (23.81 per cent) were from scheduled caste and 10 (11.91 per cent) were from scheduled tribe.

Regarding the caste of medium poultry farmers, 24 (35.29 per cent) were from other backward caste. Whereas, 19 (27.94 per cent) were from general caste and 17 (25.01 per cent) were from scheduled caste. Only 8(11.76 per cent) were from scheduled tribe.

Regarding the caste of small poultry farmers, 22 (45.83 per cent) were from other backward caste. Whereas, 13 (27.08 per cent) were from scheduled caste and 8(16.67 per cent) were from general caste. Only 5(10.42 per cent) were from scheduled tribe.

5.1.4 Size of poultry unit in possession of poultry farmers

Regarding the size of poultry unit of poultry farmers have been presented in table 5.1.4

Table 5.1.4 Distribution of poultry farmers on the basis of size of poultry unit

n= 200

S. No.	Size of poultry unit	Frequency	Percentage
1.	Small farm (< 1000 birds)	48	24.00
2.	Medium farm (1000-2000 birds)	68	34.00
3.	Large farm (> 2000 birds)	84	42.00
	Total	200	100.00

The data in table 5.1.4 and Fig. 5 that the poultry farmers were grouped into three categories viz., large, medium and small farm holders on the basis of size of poultry farm they owned. It can be observed from the table that 84 (42.00 per cent) had large poultry farms. Whereas, 68 (34.00 per cent) and 48 (24.00 per cent) of poultry farmers, were having medium and small poultry farms, respectively.

5.1.5 Experience of poultry farmers in poultry farming

Regarding the experience of poultry farmers have been presented in table 5.1.5

The data in table 5.1.5 and Fig. 6 reveal that experience of poultry farmers, 116 (58.66 per cent) had medium experience in poultry farming. Whereas, 67(32.43 per cent) poultry farmers had

low and 17 (8.90 per cent) poultry farmers had high experience in poultry farming.

Table 5.1.5 Distribution of poultry farmers on the basis of experience in poultry farming

n= 200

S.	Category	Category of poultry farmers						Pooled	
		Large		Medium		Small			
		f	%	f	%	f	%	f	%
1.	Low experience	35	41.67	18	26.47	14	29.17	67	32.43
2.	Medium experience	42	50.00	46	67.65	28	58.33	116	58.66
3.	High experience	7	8.33	4	5.88	6	12.50	17	8.90
	Total	84	100.0	68	100.0	48	100.0	200	100.00

f: Frequency, %: Percent

Regarding the experience of large poultry farmers, 42 (50.00 per cent) had medium experience, 35 (41.67 per cent) had low experience and 7 (8.33 per cent) had high experience in poultry farming.

Regarding the experience of medium poultry farmers, 46 (67.65 per cent) had medium experience, 18 (26.47 per cent) had low experience and 4 (5.88 per cent) high experience in poultry farming.

Regarding the experience of small poultry farmers, 28 (58.33 per cent) had medium experience, 14 (29.17 per cent) had low

experience and 6 (12.50 per cent) high experience in poultry farming.

5.1.6 Occupation of the poultry farmers

Regarding the occupation of poultry farmers have been presented in table 5.1.6

The data in table 5.1.6 and Fig. 7 reveal that occupation of poultry farmers, 69 (34.18 per cent) were labour Whereas, 64 (32.32 per cent) were having agricultural/animal husbandry, 61 (30.33 per cent) were having caste occupation, 4 (2.27 per cent) were having business and 2 (0.88 per cent) were having service as their main occupation.

Table 5.1.6 Distribution of the poultry farmers according to occupation

n= 200

S. No.	Occupation	Category of poultry farmers						Pooled	
		Large		Medium		Small			
		f	%	f	%	f	%	f	%
1.	Labour	29	34.53	25	36.77	15	31.24	69	34.18
2.	Caste occupation	26	30.95	21	30.88	14	29.17	61	30.33
3.	Agricultural/animal husbandry	27	32.14	20	29.41	17	35.42	64	32.32
4.	Business	1	1.19	1	1.47	2	4.17	4	2.27
5.	Service	1	1.19	1	1.47	0	0.00	2	0.88
	Total	84	100.00	68	100.00	48	100.00	200	100

f : Frequency, %: Percent

Regarding the occupation of large poultry farmers, 29 (34.53 per cent) were labour whereas, 27 (32.14 per cent) were having

agricultural/animal husbandry, 26 (30.95 per cent) were having caste occupation. However, only 1 (1.19 per cent) were having business and service as their main occupation.

As far as the occupation of medium poultry farmer was concerned, 25 (36.77 per cent) were having labour. Whereas, 21 (30.88 per cent) were having caste occupation, 29 (29.41 per cent) were having agricultural/animal husbandry. However, only 1 (1.47 per cent) were having business and service.

While small poultry farmers were having 17 (35.42 per cent) agricultural/animal husbandry, 15 (31.24 per cent) labour, 14 (29.17 per cent) caste occupation, 2 (4.17 per cent) business and no poultry farmers were having service.

5.1.7 Social participation of the poultry farmers

Regarding the social participation of poultry farmers have been presented in table 5.1.7

The data in table 5.1.7 and Fig. 8 reveal that social participation of poultry farmers, 35.79% were member of one organization, 34.97% were not member of any organization, 15.80% were member of more than one organization, 7.40% were member of committee, 3.35% were leader in organization and 2.67% were public leader.

Table 5.1.7 Distribution of the poultry farmers on the basis of social participation

n= 200

S. N o	Social participation	Category of poultry farmers						Pooled	
		Large		Medium		Small			
		f	%	f	%	f	%	f	%
1.	Not member of any organization	27	32.14	24	35.29	18	37.50	69	34.97
2.	Member of one organization	31	36.91	21	30.88	19	39.58	71	35.79
3.	Member of more than one organization	15	17.86	13	19.12	5	10.42	33	15.80
4.	Member of committee	6	7.14	6	8.82	3	6.25	15	7.40
5.	Leader in organization	3	3.57	3	4.41	1	2.08	7	3.35
6.	Public leader	2	2.38	1	1.48	2	4.17	5	2.67
	Total	84	100.00	68	100.00	48	100.00	200	100

f : Frequency, %: Percent

Results show that out of the large poultry farmers, 36.91% were member of one organization. 32.14% were not member of any organization. Only 17.86% of poultry farmers were member of more than one organization, 7.14% were member of committee, 3.57% were leader in organization and 2.38% were public leader.

Regarding the social participation of medium poultry farmers, 35.29% were not member of any organization, 30.88% were member of one organization. 19.12% were member of more than one organization, 8.82% were member of committee, 4.41% were leader in organization and 1.48% were public leader.

Regarding the social participation of small poultry farmers is concerned 39.58% were member of one organization, 37.50% were

not member of any organization, 10.42% were member of more than one organization, 6.25% were member of committee, 4.17% were public leader and 2.08% public leader in organization.

5.1.8 Source of credit of the poultry farmers

Regarding the source of credit of poultry farmers have been presented in table 5.1.8

The data in table 5.1.8 and Fig. 9 reveal that source of credit of poultry farmers, 65 (33.52 per cent) were taking credit from commercial banks, Whereas, 52 (25.21 per cent) from cooperatives, 39 (18.85 per cent) from money lenders, 25 (12.53 per cent) from relatives and 19 (9.88 per cent) were having other sources of credit.

Table 5.1.8 Distribution of the poultry farmers on the basis of source of credit n= 200

S. N o	source of credit	Category of poultry farmers						Pooled	
		Large		Medium		Small			
		f	%	f	%	f	%	f	%
1.	Relatives	8	9.52	12	17.65	5	10.42	25	12.53
2.	Money lender	16	19.05	17	25.00	6	12.50	39	18.85
3.	Cooperative	27	32.14	14	20.59	11	22.92	52	25.21
4.	Commercial banks	26	30.95	19	27.94	20	41.67	65	33.52
5.	Other	7	8.34	6	8.82	6	12.49	19	9.88
	Total	84	100.00	68	100.00	48	100.00	200	100.00

f : Frequency, %: Percent

The table 5.1.8 reveals that the source of credit of large poultry farmers where 27 (32.14 per cent) were having cooperatives as source of credit whereas, 26 (30.95 per cent) were having commercial banks, 16 (19.05 per cent) were having money lenders, 8 (9.52 per cent) were having relatives and 7 (8.34 per cent) were having other.

Results shows the source of credit of medium poultry farmers where 19 (27.94 per cent) were having commercial banks as their main source of credit, whereas, 17 (25.00 per cent) were having money lenders, 14 (20.59 per cent) were having cooperative, 12 (17.65 per cent) were having relatives and 6 (8.82 per cent) were having other.

As far as the source of credit of small poultry farmers is concerned as source of credit, 20 (41.67 per cent) were having commercial banks whereas, 11 (22.92 per cent) were having cooperatives, 6 (12.50 per cent) each were having money lenders and other. Only 5 (10.42 per cent) were having their relatives as main source of credit.

5.1.9 Proximity to market of the poultry farmers

The proximity to market of poultry farmers have been presented in table 5.1.9

The data in table 5.1.9 and Fig. 10 reveal that 84 (41.86 per cent) poultry farmers were having market 1-5 km whereas, 67 (34.50 per cent) were having less than 1 km, 42 (20.46 per cent) were having 5-10 km, 5 (2.37 per cent) were having 10-20 km and 2 (0.79 per cent) were having above 20 km.

**Table 5.1.9 Distribution of the poultry farmers on the basis of
their proximity to market** **n= 200**

S. No	Proximity to market	Category of poultry farmers						Pooled	
		Large		Medium		Small			
		f	%	f	%	f	%	f	%
1.	Less than 1 km	26	30.96	21	30.88	20	41.67	67	34.50
2.	1-5 km	32	38.09	34	50.00	18	37.50	84	41.86
3.	5-10 km	21	25.00	12	17.65	9	18.75	42	20.46
4.	10-20 km	3	3.57	1	1.47	1	2.08	5	2.37
5.	Above 20 km	2	2.38	0	0.00	0	0.00	2	0.79
	Total	84	100.00	68	100.00	48	100.00	200	100.00

f : Frequency, %: Percent

Regarding the proximity to market of large poultry farmers was concerned 32 (38.09 per cent) were having 1-5 km. whereas, 26 (30.96 per cent) were having less than 1 km, 21 (25.00 per cent) were having 5-10 km, 3 (3.57 per cent) were having 10-20 km and 2 (2.38 per cent) were having above 20 km.

The data revealed that 34 (50.00 per cent) medium poultry farmers were having 1-5 km whereas, 21 (30.88 per cent) were having less than 1 km, 12 (17.65 per cent) were having 5-10 km, 1 (1.47 per cent) were having 10-20 km and no poultry farmer was living above 20 km distance from marketing facility.

As far as market of small poultry farmers was concerned 20 (41.67 per cent) were having less than 1 km. Whereas, 18 (37.50 per cent) were having less than 1-5 km, 9 (18.75 per cent) were

having 5-10 km, 1 (2.08 per cent) were having 10-20 km and no poultry farmer was living above 20 km.

5.1.10 Size of land holding of the poultry farmers

Regarding the land of poultry farmers have been presented in table 5.1.10

The data in table 5.1.10 and Fig. 11 reveal that size of land holding of poultry farmers, 87 (43.29 per cent) were having small holding. Whereas, 78 (39.22 per cent) were having marginal holding, 19 (9.80 per cent) were having large holding and 16 (7.69 per cent) were having landless.

Table 5.1.10 Distribution of the poultry farmers on the basis of size of land holding n= 200

S. No.	Size of land holding	Category of poultry farmers						Pooled	
		Large		Medium		Small			
		f	%	f	%	f	%	f	%
1.	Landless	6	7.14	8	11.76	2	4.17	16	7.69
2.	Marginal holding	31	36.90	28	41.18	19	39.58	78	39.22
3.	small holding	37	44.08	30	44.12	20	41.67	87	43.29
4.	Big holding	10	11.90	2	2.94	7	14.58	19	9.80
	Total	84	100.00	68	100.00	48	100.00	200	100.00

f : Frequency, %: Percent

The table shows that 37 (44.08 per cent) large poultry farmers were having small holding. Whereas, 31 (36.90 per cent) were having marginal holding, 10 (11.90 per cent) were having big holding and 6 (7.14 per cent) were landless.

As far as the size of land holding of medium poultry farmers was concerned 30 (44.12 per cent) were having small holding. Whereas, 28 (41.18 per cent) were having marginal holding, 8 (11.76 per cent) were having landless and 2 (2.94 per cent) were having big holding.

Regarding the land of small poultry farmers, 20 (41.67 per cent) were having small holding. Whereas, 19 (39.58 per cent) were having marginal holding, 7 (14.58 per cent) were having big holding and 2 (4.17 per cent) were having landless.

5.2 TO ASSESS THE KNOWLEDGE LEVEL OF POULTRY FARMERS REGARDING RECOMMENDED POULTRY FARMING PRACTICES

The findings regarding the knowledge level of poultry farmers about the recommended poultry farming practices have been presented in sub heads-

5.2.1 KNOWLEDGE LEVEL OF POULTRY FARMERS ABOUT THE RECOMMENDED POULTRY FARMING PRACTICES

The findings regarding the knowledge level of poultry farmers about the recommended poultry farming practices have been presented in table 5.2.1

The data in table 5.2.1 and Fig. 12 reveal the knowledge level of poultry farmers, where 125 respondents (59.68 per cent) were having medium knowledge whereas, 44 (19.59 per cent) and 31 (20.73 per cent) of respondents, were having high and low knowledge respectively about recommended poultry farming practices.

**Table 5.2.1 Knowledge level of poultry farmers about the recommended poultry farming practices
n= 200**

S. No.	Knowledge level	Category of poultry farmers						Pooled	
		Large		Medium		Small			
		f	%	f	%	f	%	f	%
1.	Low (< 72.78)	2	2.39	1	1.47	28	58.33	31	20.73
2.	Medium (from 72.78 to	52	61.90	57	83.82	16	33.33	125	59.68
3.	High (> 88.58)	30	35.71	10	14.71	4	8.34	44	19.59
	Total	84	100.0	68	100.0	48	100.0	200	100.00

$\bar{x} = 80.68$, $\sigma = 7.90$

f : Frequency, %: Percent

In case of knowledge level of large poultry farmers, 52 respondents (61.90 per cent) were having medium knowledge whereas, 30 (35.71 per cent) and 2 (2.39 per cent) of respondents, were having high and low knowledge respectively about recommended poultry farming practices.

The results shows that knowledge level of medium poultry farmers, 57 respondents (83.82 per cent) were having medium knowledge whereas, 10 (14.71 per cent) and 1 (1.47per cent) of respondents, were having high and low knowledge respectively about recommended poultry farming practices.

The data shows knowledge level of small poultry farmers, 16 respondents (33.33 per cent) were having medium knowledge whereas, 4 (8.34 per cent) and 28 (58.33 per cent) of respondents were having high and low knowledge respectively about recommended poultry farming practices

These findings might have come due to the fact that the poultry farmers were associated with the poultry training centre for many years which might have raised their practical knowledge to medium and high level. However, those who were recently

associated with the poultry training centre might have gained low level of knowledge.

The results are in concordance with the findings of Sankhala and Sharma (2001), Choudhary and Panjabi (2002), Paul and Sharma (2004) and Jat and Yadav (2012) who reported that majority of the respondents possessed medium level of knowledge. However, the findings are in contradiction with those of Bhati and Sharma (2002) who revealed that majority of the respondents had low level of knowledge.

5.2.2 Category-wise comparison between knowledge levels of different categories of poultry farmers about recommended poultry farming practices

It is a general notion among the people that the knowledge about the recommended poultry farming practices varies in different categories of farmers. With this view in mind a comparison was made in the knowledge level about the recommended poultry farming practices of different categories of farmers by applying 'Z' test. The statistical data regarding this aspect have been presented in Table 5.2.2

Table 5.2.2 Category wise comparison between knowledge levels of poultry farmers about the recommended poultry farming practices n = 200

S. No.	Category one	Category two	Mean per cent score		“Z” value
			Category one	Category two	
1.	Large farmers (N=84)	Medium farmers (N=68)	82.91	80.86	4.77**
2.	Large farmers (N=84)	Small farmers (N=48)	82.91	62.70	4.09**
3.	Medium farmers (N=68)	Small farmers (N=48)	80.86	62.70	3.73**

** Significant at 0.01 level of probability

The data in the table 5.2.2 show that the calculated value of 'Z' for large and medium farmers was 4.77, which was statistically significant at one per cent level of probability.

Thus, it may be concluded that there was a significant difference between the knowledge level of large and medium farmers about recommended poultry farming practices. Hence, the null hypothesis $H_{01.1}$ was rejected. Similarly a significant difference between large and small farmers has also been observed with regard to the knowledge level about recommended poultry farming practices, as the calculated value of 'Z' was 4.09, which was significant at one per cent level of probability. Hence the null hypothesis $H_{01.2}$ was also rejected.

The data in table 5.2.2 further elucidate that the calculated value of 'Z' for medium and small farmers regarding knowledge level about recommended poultry farming practices (3.73) was significant at one per cent level of probability. Hence the null hypothesis $H_{01.3}$ was rejected.

The 'Z' value indicate that there was a significant difference between the knowledge level of large and medium farmers, large and small farmers and medium and small farmers about recommended poultry farming practices. This shows that large farmers might have got more exposure, more contact with poultry training centers due to and more literacy as found in comparison to the medium and small poultry farmers.

Similar findings have also been reported by Jat and Yadav (2012).

5.2.3 Practice-wise Knowledge level of poultry farmers about the recommended poultry farming practices

The practice wise knowledge level of poultry farmers about the recommended poultry farming practices was separately analyzed for all the eleven practices namely- chick procurement practices, brooding practices, litter management practices, temperature and light regulation practices, feeding practices, watering practices, equipment and spacing practices, disease and parasites practices, vaccination and management practices, sanitation practices and record keeping and marketing practices.

5.2.3.1 Knowledge level of poultry farmers about recommended chick procurement practices of poultry farming

The data in table 5.2.3.1 and Fig. 13 reveal that the highest knowledge of poultry farmers was found about “Optimum weight of one day old chick” (82.25 MPS), hence it was ranked first. The second and third ranks were assigned to the “Chicks are released from the boxes at the earliest” (76.17 MPS) and “Uniformity of stock of the chicks” (71.62 MPS), respectively.

The practices “Withholding chicks in boxes for long time after delivery”, “Reason for gentle and quick unloading of chicks”, and “Improved breed of broiler” obtained the 67.13, 64.61, and 63.78 MPS and ranks were assigned fourth, fifth, and sixth, respectively.

The lowest rank was awarded to the practices “Concept of broiler” (61.71 MPS).

Table 5.2.3.1 Knowledge level of poultry farmers about recommended chick procurement practices of poultry farming n= 200

S. No	Components of knowledge	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Optimum weight of one day old chick	77.38	98.53	70.83	82.25	I
2.	Concept of broiler	59.52	73.53	52.08	61.71	VII
3.	Improved breed of broiler	57.14	77.94	56.25	63.78	VI
4.	Uniformity of stock of the chicks	90.48	76.47	47.92	71.62	III
5.	Reason for gentle and quick unloading of chicks	76.19	67.65	50.00	64.61	V
6.	Withholding chicks in boxes for long time after delivery	82.14	58.82	60.42	67.13	IV
7.	Chicks are released from the boxes at the earliest	92.86	79.41	56.25	76.17	II
	Overall	76.53	76.05	56.25	69.61	

Regarding different categories of poultry farmers the large poultry farmers were having maximum knowledge about the practice “Chicks are released from boxes at the earliest” (92.86 MPS), whereas medium and small farmers were having maximum knowledge about “Optimum weight of one day old chick” with (98.53 MPS) and (70.83 MPS), respectively.

The lowest knowledge scores of large and medium farmers were found having lowest knowledge about the “Improved breed of broiler” and “Withholding chicks in boxes for long time after delivery” with MPS 57.14 and 58.82, respectively whereas, small farmers were having lowest knowledge scores about “Reason for gentle and quick unloading of chicks” (50.00 MPS).

The data in table 5.2.3.1 also indicate that almost all the large poultry farmers were having higher knowledge (76.53 MPS) about all chick procurement practices except “Improved breed of broiler” and all small farmers were having lower knowledge (56.25 MPS) about all the seventh practices.

It might be concluded that the poultry farmers were having low knowledge about these seven chick procurement practices. This might be due to the fact that poultry farmers might be more aware about the required weight of the day old chicks which are to be kept for a healthy stock so gave more production.

The findings of this study support the findings of Jat and Yadav (2012).

5.2.3.2 Knowledge level of poultry farmers about recommended brooding practices of poultry farming

The data in table 5.2.3.2 and Fig. 14 reveal that the highest knowledge of poultry farmers was found about “Mixing of tonic in the water” (83.23 MPS), hence it was ranked first. The second and third ranks were assigned to the “Concept of chick guard” (79.31

MPS) and “Thickness of bedding material on which chicks are kept to brood” (78.82 MPS), respectively.

The practices “The beak of chicks are dipped after receiving from hatchery”, “Types of brooding system”, “Duration of heating brooder house before letting chicks to brood”, “Ratio of dextrose and water to be offered to the brooding chicks”, “Purpose of chick guard” and “Time of removal of chick guards” and “Method of providing feed to the brooding chicks” obtained the 73.98,72.49,72.48,71.03,69.32,63.88 and 63.32 MPS and ranks were assigned fourth, fifth, sixth, seventh, eighth, ninth and tenth, respectively.

The lowest rank was awarded to the practice “Offering plenty of water to chicks before feeding” (59.08 MPS).

Table 5.2.3.2 Knowledge level of poultry farmers about the recommended brooding practices of poultry farming n= 200

S. No	Components of knowledge	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Duration of heating brooder house before letting chicks to brood	77.38	83.82	56.25	72.48	VI
2.	Types of brooding system	76.19	80.88	60.42	72.49	V
3.	Thickness of bedding material on which chicks are kept to brood	84.52	85.29	66.67	78.82	III
4.	Method of providing feed to the brooding chicks	66.67	69.12	54.17	63.32	X
5.	Offering plenty of water to chicks before feeding	69.05	60.29	47.92	59.08	XI
6.	Concept of chick guard	92.86	86.76	58.33	79.31	II
7.	Purpose of chick guard	61.90	79.41	66.67	69.32	VIII
8.	Time of removal of chick guards	71.43	76.47	43.75	63.88	IX
9.	Ratio of dextrose and water to be offered to the brooding chicks	83.33	73.53	56.25	71.03	VII
10	The beak of chicks are dipped after receiving from hatchery	78.57	80.88	62.50	73.98	IV
11	Mixing of tonic in the water to be given to chicks	80.95	75.00	93.75	83.23	I
	Overall	76.62	77.40	60.60	71.54	

Regarding different categories of poultry farmers the large and medium poultry farmers were having maximum knowledge about the practice “Concept of chick guard” (92.86 MPS) and (86.76 MPS), respectively, whereas small poultry farmers were having maximum knowledge about “Mixing of tonic in the water to be given to chicks” (93.75 MPS).

The lowest knowledge score of large poultry farmers was found about the “Purpose of chick guard” (61.90), whereas, medium and small poultry farmers were having lowest knowledge score about “Offering plenty of water to chicks before feeding” (60.29 MPS) and (47.92MPS), respectively.

The data in table 5.2.3.2 also indicate that almost all the medium poultry farmers were having higher knowledge (77.40 MPS) about all brooding practices. All small farmers were having lower knowledge (60.60 MPS) about all the eleven practices.

It might be concluded that poultry farmers were found to have higher knowledge about eleven brooding practices.

These findings are in confirmation with the findings of Jat and Yadav (2012).

5.2.3.3. Knowledge level of poultry farmers about recommended litter management practices of poultry farming

The data in table 5.2.3.3 and Fig. 15 reveal that the highest knowledge of poultry farmers was found about “Percentage of

moisture to be maintained in litter” (81.49 MPS), hence it was ranked first. The second and third ranks were assigned to the “Effect of dry litter on birds” (74.58 MPS) and “Basic qualities of the litter material” (74.37 MPS), respectively.

The practices “Treatment of wet litter and hard crust formed thereon”, “Replacement of litter from a viable poultry unit” and “Thickness of litter material to be added every month” and “Improve the quality of dropping” were obtained the 73.20, 69.17, 68.89 and 67.36 MPS and ranks were assigned fourth, fifth, sixth and seventh, respectively.

The lowest rank was awarded to the practice “Thickness of litter material spread at the time of starting a lot” (62.84 MPS).

Table 5.2.3.3 Knowledge level of poultry farmers about the recommended litter management practices of poultry farming

n= 200

S. No	Components of knowledge	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Basic qualities of the litter material	84.52	82.35	56.15	74.37	III
2.	Thickness of litter material spread at the time of starting a lot	60.71	63.24	64.58	62.84	VIII
3.	Thickness of litter material to be added every month	72.62	63.24	70.83	68.89	VI
4.	Percentage of moisture to be maintained in litter	91.67	88.24	64.58	81.49	I
5.	Effect of dry litter on birds	88.10	79.41	56.35	74.58	II
6.	Treatment of wet litter and hard crust formed thereon	75.00	77.94	66.67	73.20	IV
7.	Replacement of litter from a viable poultry unit	73.81	69.12	64.58	69.17	V
8.	Improve the quality of dropping	70.24	73.53	58.33	67.36	VII
	Overall	77.08	74.63	62.75	71.48	

Regarding different categories of poultry farmers the large and medium poultry farmers were having maximum knowledge about the practice “Percentage of moisture to be maintained in litter” (91.67 MPS) and (88.24 MPS), respectively whereas small poultry farmers were having maximum knowledge about “thickness of litter material to be added every month” (70.83 MPS).

The lowest knowledge scores of large and medium farmers were found about the “Thickness of litter material spread at the time of starting a lot” and “Thickness of litter material to be added every month” and obtained MPS 60.71 and 63.24, respectively whereas, small farmers were having lowest knowledge scores about “Basic qualities of the litter material” (56.15 MPS).

The data in table 5.2.3.3 also indicate that almost all the large poultry farmers were having higher knowledge (77.08 MPS) about all litter management practices. All small farmers were having lower knowledge (62.75 MPS) about all the eight practices. .

It might be concluded that the poultry farmers were found to have higher knowledge about nine litter management practices, they were having higher knowledge about change litter regularly and thoroughly, clean and disinfect the poultry house in comparison.

These findings are in agreement with those of Kaved *et al.* (1997-98) and Jat and Yadav (2012).

5.2.3.4 Knowledge level of poultry farmers about recommended temperature and light regulation practices of poultry farming

The data in table 5.2.3.4 and Fig. 16 reveal that the highest knowledge of poultry farmers was found about “Temperature of poultry house during first to fifth weeks” (83.04 MPS), hence it was ranked first. The second and third ranks were assigned to the “Height of thermometer from the litter” (76.51 MPS) and “Degrees of temperature reduced every week inside the poultry house” (75.08 MPS), respectively.

The practices “Optimum light for grower” and “Temperature of poultry during fourth week till the sale of birds” were obtained the 74.85, and 64.02 MPS and ranks were assigned fourth and fifth, respectively.

The lowest rank was awarded to the practice “Source of lighting for birds” (58.09 MPS).

Table 5.2.3.4 Knowledge level of poultry farmers about the recommended temperature and light regulation practices of poultry farming

n=200

S. No	Components of knowledge	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Temperature of poultry house during first to fifth weeks	96.43	98.53	54.17	83.04	I
2.	Height of thermometer from the litter	78.57	92.65	58.33	76.51	II
3.	Temperature of poultry during fourth week till the sale of birds	65.48	66.18	60.42	64.02	V
4.	Source of lighting for birds	61.90	60.29	52.08	58.09	VI
5.	Degrees of temperature reduced every week inside the poultry house	91.67	79.41	54.17	75.08	III
6.	Optimum light for grower	73.81	88.24	62.50	74.85	IV
	Overall	77.98	80.88	56.94	71.93	

Regarding different categories of poultry farmers, the large and medium poultry farmers were having maximum knowledge

about the practice “Temperature of poultry house during first to fifth weeks” and obtained MPS 96.43 and 98.53, respectively, whereas small farmers were having maximum knowledge about “Optimum light for grower” (62.50 MPS).

The lowest knowledge scores of large, medium and small farmers were found about the “Source of lighting for birds” and obtained MPS 61.90, 60.29 and 52.08, respectively.

The data in table 5.2.3.4 also indicate that almost all the medium poultry farmers were having higher knowledge (80.88 MPS) about temperature and light regulation practices. All small farmers were having lower knowledge (56.94 MPS) about all the sixth practices.

It might be concluded that the poultry farmers were found to have higher knowledge about six practices of temperature and light regulation. They give proper attention to the aspect of temperature and regulation while obtaining trainings. Because the poultry farmers might have more acquainted about demonstrations and trainings on use of non-electric energy sources and use such sources during power cuts or at critical periods through the various programme organized by poultry department for the poultry farmers.

These findings are in line with the findings of Satyanaran and Rao (2000) and Jat and Yadav (2012).

5.2.3.5 Knowledge level of poultry farmers about recommended feeding practices of poultry farming

The data in table 5.2.3.5 and Fig. 17 reveal that the highest knowledge of poultry farmers was found about “The consumed feed

be recorded and tested daily" (80.40 MPS), hence it was ranked first. The second and third ranks were assigned to the "To prepare poultry feed by purchasing ingredient from the market" (80.02 MPS) and "Feed consumes a bird during in life" (80.01 MPS), respectively.

The practices "Use of crop for green feed", "Precautions taken in changing feed", "The percentage of protein, metabolizable energy and minerals in the poultry feed", "The level of antibiotic in poultry feed", "Efficient feeding used for grower", "Proper ratio of poultry concentration and grinded maize", "Care should be taken during buying feed ingredients", "Feeders are required for layer", "The space should be filled in feeder", "Use of poultry manure in broiler feed", "The good quality of poultry feed", "Ready made feeds are preferred", "The various feeds in poultry", "The proportion of vitamins in the poultry feed", "The source of minerals in the poultry feed" and "Use of grit box in poultry house" were obtained the 79.48, 77.83, 77.65, 76.47, 76.35, 75.95, 74.79, 74.39, 73.10, 73.03, 72.41, 71.73, 70.95, 70.61, 69.06 and 66.40 MPS and ranks were assigned IV, V, VI, VII, VIII, IX, X, XI, XII, XIII, XIV, XV, XVI, XVII, XVIII and XIX, respectively.

The lowest rank was awarded to the practices "Feed requirement of a day old chick" (65.71 MPS).

Table 5.2.3.5 Knowledge level of poultry farmers about the recommended feeding practices of poultry farming

n=200

S. No	Components of knowledge	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	The various feeds in poultry	79.76	70.59	62.50	70.95	XVI
2.	The good quality of poultry feed	76.19	76.47	64.58	72.41	XIV
3.	The percentage of protein, metabolizable energy and minerals in the poultry feed	91.67	80.88	60.42	77.65	VI
4.	The proportion of vitamins in the poultry feed	76.19	79.41	56.25	70.61	XVII
5.	The source of minerals in the poultry feed	76.19	70.59	60.42	69.06	XVIII
6.	The level of antibiotic in poultry feed	83.33	79.41	66.67	76.47	VII
7.	Proper ratio of poultry concentration and grinded maize	85.71	83.82	58.33	75.95	IX
8.	Feed requirement of a day old chick	76.19	64.71	56.25	65.71	XX
9.	Feed consumes a bird during in life	89.29	88.24	62.50	80.01	III
10.	Efficient feeding used for grower	86.90	83.82	58.33	76.35	VIII
11.	Feeders are required for layer	82.14	76.47	64.58	74.39	XI
12.	Care should be taken during buying feed ingredients	79.76	77.94	66.67	74.79	X
13.	Use of grit box in poultry house	69.05	67.65	62.50	66.40	XIX
14.	Use of crop for green feed	79.76	94.12	64.58	79.48	IV

15.	To prepare poultry feed by purchasing ingredient from the market	88.10	85.29	66.67	80.02	II
16.	Ready made feeds are preferred	78.57	72.06	64.58	71.73	XV
17.	The space should be filled in feeder	80.95	77.94	60.42	73.10	XII
18.	Precautions taken in changing feed	85.71	85.29	62.50	77.83	V
19.	Use of poultry manure in broiler feed	88.10	70.59	60.42	73.03	XIII
20.	The consumed feed be recorded and tested daily	85.71	86.76	68.75	80.40	I
	Overall	81.96	78.60	62.39	74.31	

Regarding different categories of poultry farmers the large poultry farmers were having maximum knowledge about the practice “The percentage of protein, metabolizable energy and minerals in the poultry feed” (91.67 MPS), whereas medium and small farmers were having maximum knowledge about “Use of crop for green feed” and “The consumed feed be recorded and tested daily” and obtained MPS 94.12 and 68.75, respectively.

The lowest knowledge score of large poultry farmers was found about the “Use of grit box in poultry house” (69.05), whereas, medium and small poultry farmers were having lowest knowledge score about “Feed requirement of a day old chick” and “The proportion of vitamins in the poultry feed” and obtained MPS 64.71 and 56.25, respectively.

The data in table 5.2.3.5 also indicate that almost all the large poultry farmers were having higher knowledge (81.96 MPS) about all feeding practices. All small farmers were having lower knowledge (62.39 MPS) about all the twenty practices.

It might be concluded that the poultry farmers were found to have higher knowledge about twenty feeding practices have benefited through various activities organized by district poultry training centers which might have helped them to increase their knowledge about to purchase grinded maize and to prepare poultry concentrate, mix it in different ratios for different ages of birds and serve them accordingly.

These findings are in agreement with the findings of Khandekar and Sharma (2000) Jat and Yadav (2012).

5.2.3.6 Knowledge level of poultry farmers about recommended watering practices of poultry farming

The data in table 5.2.3.6 and Fig. 18 reveal that the highest knowledge of poultry farmers was found about “Proper cleaning the water before serving to birds” (84.25 MPS), hence it was ranked first. The second and third ranks were assigned to the “The precautions taken in serving water to the chick” (83.45 MPS) and “Quantity of water is required per chick / day” (82.59 MPS), respectively.

The practices “Water distance maintained for birds”, “Basic quality of water for poultry”, “Cleaning the chick drinkers as recommended”, “Quantity of water is required per grower / day”, “Quantity of water is required per layer / day”, “Method of watering for birds” and “Watering are filled in a day for birds” were obtained the

78.14, 77.73, 76.06, 75.75, 72.73, 72.71 and 68.75 MPS and ranks were assigned fourth, fifth, sixth, seventh, eighth, ninth and tenth, respectively.

The lowest rank was awarded to the practice "Source of water for birds" (67.97 MPS).

Table 5.2.3.6 Knowledge level of poultry farmers about the recommended watering practices of poultry farming n=200

S. No	Components of knowledge	Category of poultry farmers				
		Mean per cent score				Rank
		Large	Medium	Small	Pooled	
1.	Basic quality of water for poultry	91.67	85.29	56.26	77.73	V
2.	Method of watering for birds	78.57	75.00	64.58	72.71	IX
3.	Water distance maintained for birds	88.10	83.82	62.50	78.14	IV
4.	The precautions taken in serving water to the chick	91.67	94.12	64.58	83.45	II
5.	Cleaning the chick drinkers as recommended	86.90	80.88	60.42	76.06	VI
6.	Watering are filled in a day for birds	75.00	75.00	56.25	68.75	X
7.	Proper cleaning the water before serving to birds	89.29	92.65	70.83	84.25	I
8.	Quantity of water is required per chick / day	92.86	88.24	66.67	82.59	III
9.	Quantity of water is required per grower / day	77.38	85.29	64.58	75.75	VII
10.	Quantity of water is required per layer / day	80.95	70.59	66.67	72.73	VIII
11.	Source of water for birds	75.00	70.60	58.33	67.97	XI
	Overall	84.30	81.95	62.87	76.37	

Regarding different categories of poultry farmers, the large poultry farmers were having maximum knowledge about the practice “Quantity of water is required per chick / day” (92.862 MPS), whereas medium and small farmers were having maximum knowledge about “The precautions taken in serving water to the chick” (94.12 MPS) and “Proper cleaning the water before serving to birds” (70.83 MPS), respectively.

The lowest knowledge scores of large poultry farmers were found about the “Watering are filled in a day for birds” and “Source of water for birds” (75.00 MPS), whereas, medium and small poultry farmers were having lowest knowledge scores about “Quantity of water is required per layer / day” and “Watering are filled in a day for birds” and obtained MPS 70.59 and 56.25, respectively.

The data in table 5.2.3.6 also indicate that almost all the large poultry farmers were having higher knowledge (84.30 MPS) about all watering practices. All small farmers were having lower knowledge (62.87 MPS) about all the eleventh practices.

It might be concluded that the poultry farmers were found to have higher knowledge of eleventh watering practices. They were having more knowledge about regular supply of clean and fresh water.

These findings are in line with the findings of Dena *et al.* (1995) Jat and Yadav (2012).

5.2.3.7 Knowledge level of poultry farmers about recommended equipment and spacing practices of poultry farming

The data in table 5.2.3.7 and Fig. 19 reveal that the highest knowledge of poultry farmers was found about “The feeding space should be provided to chick” (80.80 MPS), hence it was ranked first. The second and third ranks were assigned to the “Use of community

nest” (78.34 MPS) and “Spacing required for nest box” (78.21 MPS), respectively.

The practices “Use of feeder”, “Spacing required for per layer”, “Spacing required for per grower”, “Use of nest box”, “Effect of inappropriate height of feeders on birds”, “Use of feed scoop”, “Floor space per chick required in brooder house”, and “Required water space to the birds at different age” were obtained the 75.98, 73.61, 72.70, 72.39, 72.32, 72.28, 71.80 and 71.03 MPS and ranks were assigned fourth, fifth, sixth, seventh, eighth, ninth, tenth and eleventh, respectively.

The lowest rank was awarded to the practice “The dimensions of an ideal chick feeder” (66.85 MPS).

Table 5.2.3.7 Knowledge level of poultry farmers about the recommended equipment and spacing practices of poultry farming n=200

S. No	Components of knowledge	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	The dimensions of an ideal chick feeder	64.29	77.94	58.33	66.85	XII
2.	The feeding space should be provided to chick	86.90	86.76	68.75	80.80	I
3.	Effect of inappropriate height of feeders on birds	85.71	75.00	56.25	72.32	VIII
4.	Floor space per chick required in	79.76	79.41	56.25	71.80	X

	brooder house					
5.	Spacing required for per grower	79.76	77.94	60.42	72.70	VI
6.	Spacing required for per layer	86.90	73.53	60.42	73.61	V
7.	Use of community nest	88.10	82.35	64.58	78.34	II
8.	Use of feed scoop	80.95	83.82	52.08	72.28	IX
9.	Use of feeder	83.33	77.94	66.67	75.98	IV
10.	Use of nest box	78.57	82.35	56.25	72.39	VII
11.	Spacing required for nest box	89.29	91.18	54.17	78.21	III
12.	Required water space to the birds at different age	88.10	75.00	50.00	71.03	XI
	Overall	82.64	80.26	58.68	73.85	

Regarding different categories of poultry farmers, the large and medium poultry farmers were having maximum knowledge about the practice “Spacing required for nest box” and obtained MPS 89.29 and 91.18, respectively whereas, small poultry farmers were having maximum knowledge about “The feeding space should be provided to chick” (68.75 MPS).

The lowest knowledge scores of large and medium poultry farmers were found about the “The dimensions of an ideal chick feeder” and “Spacing required for per layer“ and obtained MPS

64.29 and 73.53, respectively whereas, small poultry farmers were having lowest knowledge scores about “Required water space to the birds at different ages” (50.00 MPS).

The data in table 5.2.3.7 also indicate that almost all the large poultry farmers were having higher knowledge (82.64 MPS) about all equipment and spacing practices. All small farmers were having lower knowledge (58.68 MPS) about all the twelve practices.

It might be concluded that the poultry farmers were found to have higher knowledge about equipment and spacing practices and they were having higher knowledge about floor and feeder space required for different age group of birds.

These findings are in line with the findings of Sharma and Sani (2003), Paul *et al.* (2003) and Jat and Yadav (2012).

5.2.3.8 Knowledge level of poultry farmers about the common diseases and parasites of poultry farming

The data in table 5.2.3.8 and Fig. 20 reveal that the highest knowledge of poultry farmers was found about “The common disease in poultry” (87.01 MPS), hence it was ranked first. The second and third ranks were assigned the “The common ecto-parasites in poultry” (77.16 MPS) and “The common endo-parasites in poultry” (76.37 MPS), respectively.

The practices “The common symptoms of disease”, “The birds treated against various diseases” and “The various diseases in

poultry” were obtained the 75.86, 69.94, and 67.08 MPS and ranks were assigned fourth, fifth and sixth, respectively.

The lowest rank was awarded to the practice “The more prevalent disease in your area” (65.42 MPS).

Table 5.2.3.8 Knowledge level of poultry farmers about the common diseases and parasites of poultry farming

n=200

S. No	Components of knowledge	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	The various disease in poultry	70.24	70.59	60.42	67.08	VI
2.	The common disease in poultry	91.67	98.53	70.83	87.01	I
3.	The common symptoms of disease	82.14	80.88	64.58	75.86	IV
4.	The more prevalent disease in your area	76.19	61.76	58.33	65.42	VII
5.	The birds treated against various diseases	78.57	75.00	56.25	69.94	V
6.	The common endo-parasites in poultry	84.52	77.94	66.67	76.37	III
7.	The common acto-parasites in poultry	88.10	80.88	62.50	77.16	II
	Overall	81.63	77.94	62.79	74.12	

Regarding different categories of poultry farmers, the large, medium and small poultry farmers were having maximum knowledge about the “The common disease in poultry” and obtained) MPS 91.67, 98.53 and 70.83, respectively.

The lowest knowledge scores of large and medium farmers were found about the “The various disease in poultry” and “The more prevalent disease in your area” and obtained MPS 70.24 and 61.76, respectively whereas, small farmers were having lowest knowledge scores about “The birds treated against various diseases” (56.25 MPS).

The data in table 5.2.3.8 also indicate that almost all the large poultry farmers were having higher knowledge (81.63 MPS) about all disease and parasites practices. All small farmers were having lower knowledge (62.79 MPS) about all the seven practices.

It might be concluded that the poultry farmers were found to have higher knowledge about disease and parasites practices. They might be more aware about to control internal as well as external disease of poultry

These findings are supported by the findings of Chauhan and Rathore (1997-98) and Jat and Yadav (2012).

5.2.3.9 Knowledge level of poultry farmers about recommended vaccination and management practices of poultry farming

The data in table 5.2.3.9 and Fig. 21 reveal that the highest knowledge of poultry farmers was found about “The main vaccine used in poultry” (81.06 MPS), hence it was ranked first. The second and third ranks were assigned to the “The timing of vaccination of poultry birds” (77.94 MPS) and “Precautions are required to prevent disease in birds” (77.53 MPS), respectively.

The practices “Control measures taken to minimize the incidence of disease”, “The chemicals used to control endo-parasites” and “The chemicals used to control ecto-parasites” were obtained the 75.05, 72.74 and 71.75 MPS and ranks were assigned fourth, fifth and sixth, respectively.

The lowest rank was awarded to the practice “The vaccination schedule to be followed for poultry disease” (68.93 MPS).

Table 5.2.3.9 Knowledge level of poultry farmers about the recommended vaccination and management practices of poultry farming n=200

S. No	Components of knowledge	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	The main vaccine used in poultry	85.71	97.06	60.42	81.06	I
2.	The timing of vaccination of poultry birds	91.67	83.82	58.33	77.94	II
3.	The chemicals used to control ecto-parasites	80.92	67.65	66.67	71.75	VI
4.	The chemicals used to control endo-parasites	84.52	69.12	64.58	72.74	V
5.	Control measures taken to minimize the incidence of disease	82.14	86.76	56.25	75.05	IV
6.	Precautions are required to prevent disease in birds	83.33	86.76	62.50	77.53	III
7.	The vaccination schedule to be followed for poultry disease	80.98	77.94	47.92	68.93	VII
	Overall	84.18	81.30	59.52	75.00	

Regarding different categories of poultry farmers, the large and medium poultry farmers were having maximum knowledge about the practice “The timing of vaccination of poultry birds” and “The main vaccine used in poultry” and obtained MPS 91.67 and 97.06, respectively whereas, small poultry farmers were having maximum knowledge about “The chemicals used to control actoparasites” (66.67 MPS).

The data in table 5.2.3.9 also indicate that almost all the large poultry farmers were having higher knowledge (84.18 MPS) about recommended vaccination and management practices. All small farmers were having lower knowledge (59.52 MPS) about all the seventh practices.

The lowest knowledge scores of large and medium farmers were found about the “The chemicals used to control actoparasites” and obtained MPS 80.95 and 67.65, respectively whereas, small farmers were having lowest knowledge scores about “The vaccination schedule to be followed for poultry disease” (47.92 MPS).

It might be concluded that the poultry farmers were found to have higher knowledge of seventh vaccination practices, they have more knowledge about a precise and regular vaccination schedule for each flock.

These findings are supported by the findings of Satyanarayana and Roa, (2000) and Jat and Yadav (2012).

5.2.3.10 Knowledge level of poultry farmers about recommended sanitation practices of poultry farming

The data in table 5.2.3.10 and Fig. 22 reveal that the highest knowledge of poultry farmers was found about “The phenyl soaked foot pad placed at the door of the shed” (79.89 MPS), hence it was ranked first. The second and third ranks were assigned to the “The good sanitary conditions to be maintained at poultry farm” (77.57 MPS) and “Proper cleaning of shed done in new lot is to be started” (75.93 MPS), respectively.

The practices “The record of disposing the dead birds”, “The bio-security measures in poultry” and “Painting floor with lime” were obtained the 72.89, 70.33 and 67.81 MPS and ranks were assigned fourth, fifth and sixth, respectively.

The lowest rank was awarded to the practices “The outside persons are not allowed in poultry farm” (61.84 MPS).

Table 5.2.3.10 Knowledge level of poultry farmers about the recommended sanitation practices of poultry farming n=200

S. No	Components of knowledge	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	The good sanitary conditions to be maintained at poultry farm	91.67	76.47	64.58	77.57	II
2.	The outside persons are not allowed in poultry farm	63.10	66.18	56.25	61.84	VII
3.	The phenyl soaked foot pad placed at the door of the shed	92.86	92.65	54.17	79.89	I
4.	Proper cleaning of shed done in new lot is to be started	79.76	89.71	58.33	75.93	III
5.	The record of disposing the dead birds	77.38	80.88	60.42	72.89	IV
6.	Painting floor with lime	75.00	61.76	66.67	67.81	VI
7.	The bio-security measures in poultry	84.52	76.47	50.00	70.33	V
	Overall	80.61	77.73	58.63	72.32	

Regarding different categories of poultry farmers, the large and medium poultry farmers were having maximum knowledge about the practice “The phenyl soaked foot pad placed at the door of the shed” and obtained MPS 92.86 and 92.65, respectively whereas, small poultry farmers were having maximum knowledge about “Painting floor with lime” (66.67MPS).

The lowest knowledge scores of large, medium poultry farmers were having lowest knowledge scores about the “The outside persons are not allowed in poultry farm” and “Painting floor with lime” and obtained MPS 63.10 and 61.76, respectively whereas, small poultry farmers were having low knowledge about “The bio-security measures in poultry” (50.00 MPS).

The data in table 5.2.3.10 also indicate that almost all the large poultry farmers were having higher knowledge (80.61 MPS) about all sanitation practices. All small farmers were having lower knowledge (58.63 MPS) about all the seven practices.

It might be concluded that the poultry farmers were found to have higher knowledge of seven sanitation practices, they were more aware about the reason of restrictions to the visits of outsiders in the poultry farm.

These findings are in agreement with the findings of Choudhary and Panjabi (2002) and Jat and Yadav (2012).

5.2.3.11 Knowledge level of poultry farmers about recommended record keeping and marketing practices of poultry farming

The data in table 5.2.3.11 and Fig. 23 reveal that the highest knowledge of poultry farmers was found about "Record keeping of poultry feeds" (81.30 MPS), hence it was ranked first. The second and third ranks were assigned to the "Record of poultry health" (75.67 MPS) and "Price record of poultry products" (74.48 MPS), respectively.

The practices "Record of birds mortality", "Appropriate time to sell the poultry products" and "Record of day to day expenditure" were obtained the 72.41, 69.46 and 67.88 MPS and ranks were assigned fourth, fifth and sixth, respectively.

The lowest rank was awarded to the practice "Demand record of poultry products" (67.60 MPS).

Table 5.2.3.11 Knowledge level of poultry farmers about the recommended record keeping and marketing practices of poultry farming

n=200

S. No	Components of knowledge	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Record keeping of poultry feeds	85.71	85.29	72.92	81.30	I
2.	Record of birds mortality	76.19	76.47	64.58	72.41	IV
3.	Record of day to day expenditure	76.19	69.12	58.33	67.88	VI
4.	Price record of poultry products	82.14	80.88	60.42	74.48	III
5.	Appropriate time to sell the poultry products	80.95	69.12	58.34	69.46	V
6.	Record of poultry health	80.95	79.41	66.67	75.67	II
7.	Demand record of poultry products	63.10	64.71	75.00	67.60	VII
	Overall	77.89	75.00	65.17	72.68	

Regarding different categories of poultry farmers, the large and medium poultry farmers were having maximum knowledge about the practice “record keeping of poultry feeds” and obtained

MPS 85.71 and 85.29, respectively whereas, small poultry farmers were having maximum knowledge about “Demand record of poultry products” (75.00 MPS).

The lowest knowledge scores of large and medium poultry farmers were having lowest knowledge about the practice “Demand record of poultry products” and obtained MPS 63.10 and 64.71, respectively whereas, small poultry farmers were having lowest knowledge about “Record of day to day expenditure” (58.33 MPS).

The data in table 5.2.3.11 also indicate that almost all the large poultry farmers were having higher knowledge (77.89 MPS) about all record keeping and marketing practices. All small farmers were having lower knowledge (65.17 MPS) about all the seven practices.

It might be concluded that the poultry farmers were found to have higher knowledge of seven records keeping and marketing practices have benefited through poultry development programmes organized by district poultry officers. The poultry farmers were having good transportation facility for taking their product to the market. They were more aware about marketing network and benefits of direct marketing to minimize the role of middle men.

These findings are supported by the findings of Sankhala and Sharma (2001) and Jat and Yadav (2012).

5.2.3.12 Practice-wise overall knowledge level of the poultry farmers about recommended poultry farming practices

Practice wise over all knowledge level of poultry farmers about recommended poultry farming practices was measured, to obtain the overall knowledge regarding various recommended major practices of poultry farming possessed poultry farmers. The overall scores for each major practice was summed up and results have been presented in table 5.2.3.12.

The data in table 5.2.3.12 and Fig. 24 reveal that the highest knowledge of poultry farmers was found about “Brooding practices” (87.44 MPS), hence it was ranked first. The second and third ranks were assigned to the “Watering practices” (76.38 MPS) and “Vaccination and management practices” (75.00 MPS), respectively.

The practices “Disease and parasites”, “Equipment and spacing practices”, “Record keeping and marketing practices”, “Sanitation practices”, “Temperature & light regulation practices”, “Litter management practices”, and “Feeding practices” were obtained the 72.12, 73.86, 72.69, 72.32, 71.91, 71.49 and 71.32 MPS and ranks were assigned fourth, fifth, sixth, seventh, eighth, ninth and tenth, respectively.

The lowest rank was awarded to the practice “Chick procurement practices” (69.61 MPS).

Table 5.2.3.12 Practice-wise overall knowledge level of the poultry farmers about recommended poultry farming practices

n=200

S. No	Major practices of knowledge	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1	Chick procurement practices	76.53	76.05	56.25	69.61	XI
2	Brooding practices	93.65	94.61	74.07	87.44	I
3	Litter management practices	77.08	74.63	62.76	71.49	IX
4	Temperature & light regulation practices	77.98	80.88	56.94	71.91	VIII
5	Feeding practices	81.96	78.60	62.39	71.32	X
6	Watering practices	84.31	81.95	62.88	76.38	II
7	Equipment and spacing practices	82.64	80.27	58.68	73.86	V
8	Disease and parasites	81.63	77.94	62.80	74.12	IV
9	Vaccination and management practices	84.18	81.30	59.52	75.00	III
10	Sanitation practices	80.61	77.73	58.63	72.32	VII
11	Record keeping and marketing practices	77.89	75.00	65.18	72.69	VI
	Overall	81.67	79.90	61.82	74.19	

Regarding different categories of poultry farmers, the large, medium and small poultry farmers were having maximum knowledge about the practice “Brooding practices” and obtained MPS 93.65, 94.61 and 74.07, respectively.

The lowest knowledge scores of large and small poultry farmers were found about the “Chick procurement practices” and obtained MPS 76.53 and 56.25, respectively whereas, medium poultry farmers were having lowest knowledge scores about “Litter management practices” (74.63 MPS).

The data in table 5.2.3.12 also indicate that almost all the large poultry farmers were having higher knowledge (81.67 MPS) about all equipment and spacing practices. All small farmers were having lower knowledge (61.82 MPS) about all the eleventh practices.

These findings are in line with the findings of Paul *et al.* (2003) and Jat and Yadav (2012).

5.3 TO MEASURE THE EXTENT OF ADOPTION OF RECOMMENDED POULTRY FARMING PRACTICES BY THE POULTRY FARMERS

The findings of adoption of the recommended poultry farming practices by the poultry farmers have been presented in sub heads-

5.3.1 ADOPTION OF THE RECOMMENDED POULTRY FARMING PRACTICES BY THE POULTRY FARMERS

Regarding the adoption of the recommended poultry farming practices by the poultry farmers have been presented in table 5.3.1.

The data in table 5.3.1 and Fig. 25 also reveal that regarding adoption level of all the poultry farmers, 141 respondents (71.61 per cent) were having medium adoption whereas, 21 (9.21 per cent) and 38 (19.18 per cent) of respondents, were having high and low adoption respectively about recommended poultry farming practices.

Table 5.3.1 Adoption of recommended poultry farming practices by the poultry farmers

n= 200

S.	Adoption category	Category of poultry farmers						Pooled	
		Large		Medium		Small			
		f	%	f	%	f	%	f	%
1.	Low (< 57.81)	16	19.05	12	17.65	10	20.83	38	19.18
2.	Medium (from 57.81 to 66.47)	52	61.90	53	77.94	36	75.00	141	71.61
3.	High (> 66.47)	16	19.05	3	4.41	2	4.17	21	9.21
	Total	84	100.00	68	100.00	48	100.00	200	100.00

$\bar{X} = 62.14$, $\sigma = 4.33$

f: Frequency, %: Percent

Regarding the adoption of large poultry farmers, 52 respondents (61.90 per cent) were having medium adoption whereas, 16 (19.05 per cent) of equal respondents, were having high and low adoption respectively about recommended poultry farming practices.

Regarding the adoption of medium poultry farmers, 53 respondents (77.94 per cent) were having medium adoption whereas, 3 (4.41 per cent) and 12 (17.65 per cent) of respondents, were having high and low adoption respectively about recommended poultry farming practices.

Regarding the adoption of small poultry farmers, 36 respondents (75.00 per cent) were having medium adoption whereas, 2 (4.17 per cent) and 10 (20.83 per cent) of respondents were having high and low adoption respectively about recommended poultry farming practices.

Looking to the farmers category-wise analysis of the adoption level regarding recommended poultry farming practices, it was observed that majority of all the three categories *viz.*, large, medium and small farmers had low to medium adoption of recommended poultry farming practices. The low to medium adoption level might be attributed to fear among the farmers about innovations, illiteracy, less exposure to information sources, non-availability of the literature about the recommended poultry farming practices. It means that literacy and participation in poultry training programmes by the respondents appeared to be responsible for their higher or lower adoption about recommended poultry farming practices.

These findings are supported by findings of Podikunju (1999), Patel *et al.* (1999-2000) and Mundhawa and Patel (1999-2000) and Jat and Yadav (2009).

5.3.2 Category-wise comparison between different categories of poultry farmers in adoption of the recommended poultry farming practices

It is the general notion among the people that the adoption of recommended poultry farming practices varies in different categories of farmers. With this view in mind a comparison was made in the adoption of recommended poultry farming practices of different categories of farmers by applying 'Z' test. The statistical data regarding this aspect have been presented in Table 5.3.2.

Table 5.3.2 Category-wise comparison between poultry farmers in adoption of the recommended poultry farming practices

n = 200

S.No.	Category one	Category two	Mean per cent score		“Z” value
			Category one	Category two	
1.	Large farmers (N=84)	Medium farmers (N=68)	62.15	62.72	1.68 NS
2.	Large farmers (N=84)	Small farmers (N=48)	62.15	61.12	2.76**
3.	Medium farmers (N=68)	Small farmers (N=48)	62.72	61.12	4.31**

** Significant at 0.01 level of probability

NS = Non significant

The data in the table 5.3.2 show that the calculated value of ‘Z’ for large and medium farmers was 1.68, which was statistically non-significant at one per cent level of probability.

Thus, it may be concluded that there was a non-significant difference between the adoption of large and medium farmers about recommended poultry farming practices. Hence, the null hypothesis $H_{02.1}$ was accepted. Similarly a significant difference between large and small farmers has also been observed with regard to the adoption of about recommended poultry farming practices, as the calculated value of ‘Z’ was 2.76, which was significant at one per cent level of probability. Hence the null hypothesis $H_{02.2}$ was also rejected.

The data in table 5.3.2 further elucidate that the calculated value of ‘Z’ for medium and small farmers regarding adoption of

about recommended poultry farming practices was significant (4.31) at one per cent level of probability. Hence the null hypothesis $H_{02.3}$ was rejected.

The 'Z' values indicate that there was a non significant difference between large and medium and significant difference between large and small farmers and medium and small farmers in adoption of the recommended poultry farming practices. This shows that large farmers might have more exposure, frequent contact with poultry training centres and more literacy were found in comparison to the medium and small poultry farmers.

These findings are in agreement with the findings of Bhati *et al.* (1997-98) and Jagadeeshwara *et al.* (1997-98) and Jat and Yadav (2012).

5.3.3 Practice-wise adoption of poultry farmers about the recommended poultry farming practices

To explore the practice wise adoption of poultry farmers about the recommended poultry farming, ten practices namely chick procurement, brooding, litter management, temperature and light regulation, feeding, watering, equipment and spacing, disease management, sanitation and record keeping and marketing practices of poultry farming, scrutinized by experts were considered.

5.3.3.1 Adoption of recommended chick procurement practices by the poultry farmers

The adoption of recommended poultry farming practices by the poultry farmers were measured for all the eight important sub practices of chick procurement practice. The data in table 5.3.3.1 and Fig. 26 indicate that out of eight practices of chick procurement, “Purchasing of chicks from reputed hatchery” adopted by poultry farmers was occupied the highest position (82.60 MPS), hence it was ranked first.

The second, third , fourth and fifth ranks were awarded to the practices “Purchasing chicks of recommended breed” (80.95 MPS), “Checking wings, legs, eyes etc. of chicks while purchasing” (80.42 MPS), “Ensuring optimum weight of chicks during purchase” (80.34 MPS) and “Releasing chicks from the boxes at the earliest” (77.92 MPS), respectively.

The sixth and seventh ranks were assigned to “Counting chicks before keeping them in brooder” (77.51 MPS) and “Keeping a uniform lot of birds” (77.18 MPS), respectively.

The last eighth rank was awarded to the least adopted practice “Purchasing chicks from a nearby hatchery” (76.36 MPS).

Table 5.3.3.1 Adoption of recommended chick procurement practices by the poultry farmers

n= 200

S. No	Adoption items	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Purchasing of chicks from reputed hatchery	78.57	83.82	85.42	82.60	I
2.	Ensuring optimum weight of chicks during purchase	76.19	79.41	85.42	80.34	IV
3.	Keeping a uniform lot of birds	75.00	72.06	84.50	77.18	VII
4.	Purchasing chicks of recommended breed	84.52	75.00	83.33	80.95	II
5.	Purchasing chicks from a nearby hatchery	77.38	80.88	70.83	76.36	VIII
6.	Checking wings, legs, eyes etc. of chicks while purchasing	88.10	82.35	70.83	80.42	III
7.	Counting chicks before keeping them in brooder	89.29	74.50	68.75	77.51	VI
8.	Releasing chicks from the boxes at the earliest	72.35	76.00	85.42	77.92	V
	Overall	80.17	78.00	79.31	79.16	

The data in table 5.3.3.1 further depict that among the poultry farmers, large farmers were found to have highest adoption (80.17 MPS) whereas, lowest adoption of recommended chick procurement practices was found among small farmers(79.31 MPS).

It might be concluded that the poultry farmers were found to have higher adoption of eight chick procurement practices. It might be due to the fact that the poultry farmers might have benefited through poultry training programmes and they were well versed about the healthy chicks which should be purchased from well known and reliable source. They were also well aware about norms and regulations on hatchery and farm management than poultry farmers.

These findings are supported with the findings of Goswami (2001).

5.3.3.2 Adoption of recommended brooding practices by the poultry farmers

The adoption of recommended poultry farming practices by the poultry farmers were measured for all the eleven important practices of brooding. The data in table 5.3.3.2 and Fig. 27 indicate that out of eleven practices of brooding, “Dipping beaks of chicks after receiving from hatchery” adopted by poultry farmers was occupied the highest position (83.21 MPS), hence it was ranked first.

The second, third, fourth, fifth, sixth, seventh and eighth ranks were awarded to the practices “Providing proper feed and water in brooder house” (82.23 MPS), “Use of artificial brooding” (80.27 MPS), “Use of chick guard” (79.94 MPS), “Preparing brooder house before arrival of chicks” (79.03 MPS), “Use of thermometer for

measuring temperature fluctuations” (76.77 MPS), “Providing feed to the day old chicks on old newspapers” (76.63 MPS) and “Spreading required thickness of bedding material on brooding floor” (74.46 MPS), respectively.

The ninth and tenth ranks were assigned to “Mixing tonic in drinking water of brooding chick” (73.80 MPS) and “Heating brooder house before letting in the chicks” (68.22 MPS), respectively.

The last eleventh rank was awarded to the least adopted practice *i.e.* “Removing chick guard after prescribed days” (65.63 MPS).

Table 5.3.3.2 Adoption of recommended brooding practices by the poultry farmers

S. No	Adoption items	n= 200				
		Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Preparing brooder house before arrival of chicks	76.19	83.82	77.08	79.03	V
2.	Heating brooder house before letting in the chicks	83.33	83.82	37.50	68.22	X
3.	Use of thermometer for measuring temperature fluctuations	65.48	79.41	85.42	76.77	VI
4.	Providing proper feed and water in brooder house	83.33	77.94	85.42	82.23	II
5.	Spreading required	79.76	85.29	58.33	74.46	VIII

	thickness of bedding material on brooding floor					
6.	Providing feed to the day old chicks on old newspapers	73.81	85.29	70.80	76.63	VII
7.	Use of chick guard	71.43	80.88	87.50	79.94	IV
8.	Removing chick guard after prescribed days	72.62	61.76	62.50	65.63	XI
9.	Mixing tonic in drinking water of brooding chick	76.19	76.47	68.75	73.80	IX
10.	Use of artificial brooding	83.33	72.06	85.42	80.27	III
11.	Dipping beaks of chicks after receiving from hatchery	88.10	82.35	79.17	83.21	I
	Overall	77.59	79.00	72.53	76.38	

The data in table 5.3.3.2 further depict that the medium farmers were found to have highest adoption (79.00 MPS) whereas, lowest adoption (72.53 MPS) of recommended brooding practices was found among small farmers.

The results might be outcome of reason that poultry farmers of the study area usually follow the brooding in the same shed in which they are to be reused further. So, very seldom the practices of using chick guards are applied. It might be concluded that the poultry farmers were found to have higher adoption of eleven brooding practices. They regulate temperature, humidity and proper ventilation during brooding and prevent over heating and chilling because the poultry farmers might have more contact with poultry department and benefited by various poultry departmental programmes introduced by the poultry department.

These findings are in confirmation of the findings of Khati and Kumar (1996) and Rao and Mathure (2002).

5.3.3.3 Adoption of recommended litter management practices by the poultry farmers

The adoption of recommended poultry farming practices by the poultry farmers were measured for all the nine important practices of litter management. The data in the table 5.3.3.3 and Fig. 28 indicate that out of nine practices of litter management, “Maintenance of required percentage of moisture in the litter” adopted by poultry farmers was occupied the highest position (92.86 MPS), hence it was ranked first.

The second, third, fourth, fifth and sixth ranks were awarded to the practices “Replacement of wet and crust formed litter” (87.82 MPS), “Required thickness of litter material at the time of starting a lot” (83.89 MPS), “Use of good quality litter material” (83.41 MPS), “Spreading recommended thickness of bedding material every month” (78.63 MPS) and “Change of litter after every lot” (76.21 MPS), respectively.

The seventh and eighth ranks were assigned to “Improve the quality of dropping” (73.66 MPS) and “Adopted deep litter system” (72.53 MPS), respectively.

The last ninth rank was awarded to the least adopted practice “Slight hoeing of litter material at regular intervals” (70.66 MPS).

Table 5.3.3.3 Adoption of recommended litter management practices by the poultry farmers

n= 200

S. No	Adoption items	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Use of good quality litter material	88.10	80.88	81.25	83.41	IV
2.	Required thickness of litter material at the time of starting a lot	80.95	85.29	85.42	83.89	III
3.	Spreading recommended thickness of bedding material every month	79.76	85.29	70.83	78.63	V
4.	Slight hoeing of litter material at regular intervals	79.76	67.65	64.58	70.66	IX
5.	Maintenance of required percentage of moisture in the litter	90.48	98.53	89.58	92.86	I
6.	Replacement of wet and crust formed litter	88.10	94.12	81.25	87.82	II
7.	Change of litter after every lot	76.19	69.12	83.33	76.21	VI
8.	Improve the quality of dropping	82.14	61.76	77.08	73.66	VII
9.	Adopted deep litter system	72.62	72.06	72.92	72.53	VIII
	Overall	82.01	79.41	78.47	79.96	

The data in table 5.3.3.3 further elucidate that the large poultry farmers were found to have highest adoption (82.01 MPS)

whereas, lowest adoption of recommended litter management practices was found among small farmers (78.47 MPS).

It might be concluded that the poultry farmers were found to have higher extent of adoption of nine litter management practices, they adopt only those practices which give more production such as change litter regularly and thoroughly clean and disinfect the poultry house

These findings are in agreement with the findings of Mathiyalagan (1997)

5.3.3.4 Adoption of recommended temperature and light regulation practices by the poultry farmers

The adoption of recommended poultry farming practices by the poultry farmers were measured for all the seven important practices of temperature and light regulation. The data in the table 5.3.3.4 and Fig. 29 indicate that out of seven practices of temperature and light regulation, “Keeping required temperature of house during 1st week” adopted by poultry farmers was occupied the highest position (85.78 MPS), hence it was ranked first.

The second, third and fourth ranks were awarded to the practices “Give optimum light to grower” (83.22 MPS), “Use of automatic temperature regulation devices” (81.30 MPS) and “Use optimum temperature for grower” (79.54 MPS), respectively.

The fifth and sixth ranks were assigned to “Fixing thermometer at recommended height on the wall” (79.51 MPS) and “Reduction of 5⁰F temperature every week” (76.65 MPS), respectively.

The last seventh rank was awarded to the least adopted practice “Use of alternative heating arrangement in case of power failure” (72.20 MPS).

The data in table 5.3.3.4 further elucidate that the medium poultry farmers were found to have highest adoption (82.98 MPS) whereas, lowest adoption (77.68 MPS) of recommended temperature and light regulation practices was found among small farmers.

It might be concluded that the poultry farmers were found to have higher extent of adoption of seven temperature and light regulation practices and they might have more effective adoption of temperature requirement for poultry birds during first week and about the same in the subsequent weeks.

Table 5.3.3.4 Adoption of recommended temperature and light regulation practices by the poultry farmers

n= 200

S. No	Adoption items	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Keeping required temperature of house during 1 st week	83.33	82.35	91.67	85.78	I
2.	Reduction of 5 ⁰ F temperature every week	85.71	83.82	60.42	76.65	VI
3.	Use of alternative heating arrangement in case of power failure	69.05	80.88	66.67	72.20	VII
4.	Use of automatic temperature regulation devices	73.81	86.76	83.33	81.30	III
5.	Fixing thermometer at recommended height on the wall	77.38	88.24	72.92	79.51	V
6.	Use optimum temperature for grower	78.57	80.88	79.17	79.54	IV
7.	Give optimum light to grower	82.14	77.94	89.58	83.22	II
	Overall	78.57	82.98	77.68	79.74	

These findings are similar with the findings of Nishi (1996) and Sah (1996) but contradicts with the findings of Mithyalagan (1997) and Rao and Mathure (2002).

5.3.3.5 Adoption of recommended feeding practices by the poultry farmers

The adoption of recommended poultry farming practices by the poultry farmers were measured for all the ten practices of feeding. The data in the table 5.3.3.5 and Fig. 30 indicate that out of ten practices of feeding, “Balanced ration for feeding poultry” adopted by poultry farmers was occupied the highest position (87.25 MPS), hence it was ranked first.

The second, third, fourth, fifth, sixth and seventh ranks were awarded to the practices “Filling feeders to half level” (85.16 MPS), “Starter and finisher mesh in proper balance” (81.91 MPS), “Mixing of recommended dose of antibiotic in poultry feed” (81.24 MPS), “Using green feed for poultry” (80.82 MPS), “Recommended number of chick feeders” (80.70 MPS) and “Use of grit box in poultry house” (80.14 MPS), respectively.

The eighth and ninth ranks were assigned to “Recommended ratio of poultry concentrate and grinded maize” (80.09 MPS) and “Use of poultry manure in broiler feed” (79.05 MPS), respectively.

The last tenth rank was awarded to the least adopted practice “Recommended differential doses of feed to poultry birds at different age groups” (77.98 MPS).

Table 5.3.3.5 Adoption of recommended feeding practices by the poultry farmers

n= 200

S. No	Adoption items	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Recommended ratio of poultry concentrate and grinded maize	64.29	92.65	83.33	80.09	VIII
2.	Balanced ration for feeding poultry	88.10	88.24	85.42	87.25	I
3.	Mixing of recommended dose of antibiotic in poultry feed	79.76	76.47	87.50	81.24	IV
4.	Starter and finisher mesh in proper balance	82.14	82.35	81.25	81.91	III
5.	Recommended differential doses of feed to poultry birds at different age groups	79.76	75.00	79.17	77.98	X
6.	Recommended	80.95	88.24	72.92	80.70	VI

	number of chick feeders					
7.	Filling feeders to half level	84.52	89.71	81.25	85.16	II
8.	Using green feed for poultry	80.95	82.35	79.17	80.82	V
9.	Use of poultry manure in broiler feed	78.57	79.41	79.17	79.05	IX
10.	Use of grit box in poultry house	79.76	79.41	81.25	80.14	VII
	Overall	79.88	83.38	81.04	81.43	

The data in table 5.3.3.5 further depict that the medium farmers were found to have higher adoption (83.38 MPS) whereas, lowest adoption (79.88 MPS) of recommended feeding practices of farming was found among large farmers.

It might be concluded that the poultry farmers were found to have higher extent of adoption of ten feeding practices. This might be due to the fact that poultry farmers might have learnt about good quality of commercial poultry feed or a carefully formulated home mixed feed and use only balanced feed by receiving trainings.

The findings are also supported by the findings of Singh and Chahal (2000)

5.3.3.6 Adoption of recommended watering practices by the poultry farmers

The adoption of recommended poultry farming practices by the poultry farmers were measured for all the five important

practices of watering. The data in table 5.3.3.6 and Fig. 31 indicate that out of five practices of watering, “Proper cleaning the water before serving to birds” adopted by poultry farmers was occupied the highest position (87.25 MPS), hence it was ranked first.

The second, third and fourth ranks were awarded to the practices “Keeping drinkers at required distance” (81.91 MPS) “Providing water to the birds for required number of times” (81.24 MPS)” Taking proper precautions while serving water to the chicks” (77.98 MPS), respectively. The lowest rank was awarded to the practice “Cleaning the chick drinkers as recommended” (73.98 MPS).

Table 5.3.3.6 Adoption of recommended watering practices by the poultry farmers

n= 200

S. No	Adoption items	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Cleaning the chick drinkers as recommended	67.86	70.59	83.33	73.93	V
2.	Proper cleaning the water before serving to birds	88.10	88.24	85.42	87.25	I
3.	Providing water to the birds for required number of times	79.76	76.47	87.50	81.24	III

4.	Keeping drinkers at required distance	82.14	82.35	81.25	81.91	II
5.	Taking proper precautions while serving water to the chicks	79.76	75.00	79.17	77.98	IV
	Overall	79.52	78.53	83.33	80.46	

The data in table 5.3.3.6 further explain that the small farmers were found to have higher adoption (83.33 MPS) whereas, lowest adoption (78.53 MPS) of recommended watering practices was found among medium farmers.

It might be concluded from the findings that the poultry farmers were found to have higher adoption of five watering practices and they were adopted adequate and regular supply of clean and fresh water, through waterer / nipple drinkers.

The findings are in agreement with findings of Mathiyalagem (1997).

5.3.3.7 Adoption of recommended equipment and spacing practices by the poultry farmers

The adoption of recommended poultry farming practices by the poultry farmers were measured for all the eight practices of equipment and spacing. The data in the table 5.3.3.7 and Fig. 32 indicate that out of eight practices of equipment and spacing, “required waterer space to the birds at different age” adopted by

poultry farmers was occupied the highest position (85.66 MPS), hence it was ranked first.

The second, third, fourth and fifth ranks were awarded to the practices “required feeder space to the birds at different ages” (84.76 MPS), “required floor space to the birds at different age” (80.82 MPS), “feeders and waterers of required depth” (80.14 MPS) and “use nest box and community nest in poultry” (79.42 MPS), respectively.

The sixth and seventh ranks were assigned to “use feed scoop in poultry” (79.41 MPS) and “feeders of required height” (79.05 MPS), respectively.

The last eighth rank was awarded to the least adopted practice “required waterer space to the birds” (78.66 MPS).

Table 5.3.3.7 Adoption of recommended equipment and spacing practices by the poultry farmers
n= 200

S. No	Adoption items	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Required feeder space to the birds at different age	83.33	89.71	81.25	84.76	II
2.	Required floor space to the birds at different age	80.95	82.35	79.17	80.82	III
3.	Feeders of required height	78.57	79.41	79.17	79.05	VII
4.	Feeders and waterers of required depth	79.76	79.41	81.25	80.14	IV

5.	Required waterer space to the birds	76.19	76.47	83.33	78.66	VIII
6.	Use nest box and community nest in poultry	78.57	86.76	72.92	79.42	V
7.	Use feed scoop in poultry	75.00	88.24	75.00	79.41	VI
8	Required waterer space to the birds at different ages	83.33	88.24	85.42	85.66	I
	Overall	79.46	83.82	79.68	80.99	

The data in table 5.3.3.7 further elucidate that the medium farmers were found to have higher adoption (83.92 MPS) whereas, lowest adoption (79.46 MPS) of recommended equipment and spacing practices of poultry farming was found among large farmers.

It might be concluded that poultry farmers were found to have higher adoption of eight equipment and spacing practices of poultry farming.

These findings in agreement with the findings of Sihag *et al.* (1996) and Verma(1996) and in contradiction with the findings of Nair and Ghadolia (2000).

5.3.3.8 Adoption of common disease management by the poultry farmers

The adoption of recommended poultry farming practices by the poultry farmers were measured for all the eight important

practices of disease management. The data in the table 5.3.3.8 and Fig. 33 indicate that out of eight practices of disease management, “consult veterinarian/laboratory” adopted by poultry farmers was occupied the highest position (87.13 MPS), hence it was ranked first.

The second, third, fourth and fifth ranks were awarded to the practices “examining chicks regularly for their health” (85.88 MPS), “vaccination schedule to be followed” (83.22 MPS), “Sending dead birds for postmortem” (82.68 MPS) and “Vaccination of chicks against bird flue disease” (79.54 MPS), respectively.

The sixth and seventh ranks were assigned to “recommended doses of vaccine” (79.51 MPS) and “isolation of underdeveloped and weak chicks” (77.63 MPS), respectively.

The last eighth rank was awarded to the least adopted practice “vaccination of chicks at right time” (76.35 MPS).

Table 5.3.3.8 Adoption of common disease management by the poultry farmers

n= 200

S. No	Adoption items	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Examining chicks regularly for their health	82.14	83.82	91.67	85.88	II
2.	Isolation of underdeveloped and weak chicks	85.71	86.76	60.42	77.63	VII

3.	Vaccination of chicks at right time	78.57	83.82	66.67	76.35	VIII
4.	Sending dead birds for postmortem	75.00	89.71	83.33	82.68	IV
5.	Recommended doses of vaccine	77.38	88.24	72.92	79.51	VI
6.	Vaccination of chicks against bird flue disease	78.57	80.88	79.17	79.54	V
7.	Vaccination schedule to be followed	82.14	77.94	89.58	83.22	III
8	Consult veterinarian/laboratory	83.33	92.65	85.42	87.13	I
	Overall	80.35	85.48	78.64	81.49	

The data in table 5.3.3.8 further elucidate that the medium farmers were found to have highest adoption (85.48 MPS) whereas, lowest adoption (80.35 MPS) of recommended disease management practices of poultry farming was found among large farmers.

It might be concluded that poultry farmers were found to have higher extent of adoption of eight disease management practices. This might be due to the fact that the poultry farmers might have more aware about paramedical facilities, high incidence of disease and their control measures. They also believed in prevention is better than cure.

These findings are supported by the findings Patel *et al.* (1999-2000) and Sharma *et al.* (2000).

5.3.3.9 Adoption of recommended sanitation practices by the poultry farmers

The adoption of recommended poultry farming practices by the poultry farmers were measured for all the six important practices of sanitation. The data in the table 5.3.3.9 and Fig. 34 indicate that out of six practices of sanitation, “layer of lime or phenyl soaked footpad at the door of shed” adopted by poultry farmers was occupied the highest position (95.25 MPS), hence it was ranked first.

The second, third, fourth and fifth ranks were awarded to the practices “burying the dead birds deep into the pits” (85.87 MPS) “proper sanitary conditions inside the farm” (75.80 MPS), “proper disinfections of house before starting the lot” (73.73 MPS) and “painting floor with lime” (67.08 MPS), respectively.

The last sixth rank was awarded to the least adopted practice “restricting visits of out sides in the farm” (59.39 MPS).

**Table 5.3.3.9 Adoption of recommended sanitation practices
by the poultry farmers**

n= 200

S. No	Adoption items	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Proper sanitary conditions inside the farm.	72.62	73.53	81.25	75.80	III
2.	Restricting visits of out sides in the farm	71.43	58.82	47.92	59.39	VI
3.	Layer of lime or phenyl soaked footpad at the door of shed	92.86	97.06	95.83	95.25	I
4.	Burying the dead birds deep into the pits	86.90	85.29	85.42	85.87	II
5.	Proper disinfections of house before starting the lot	75.00	69.12	77.08	73.73	IV
6.	Painting floor with lime	70.24	70.59	60.42	67.08	V
	Overall	78.17	75.74	74.65	76.19	

The data in table 5.3.3.9 further elucidate that the large farmers were found to have higher adoption (78.17 MPS) whereas, lowest adoption (74.65 MPS) of recommended sanitation practices of poultry farming was found among small farmers.

It might be concluded that the poultry farmers were found to have higher extent of adoption of six sanitation practices, they always avoid visitors as much as possible in poultry house. This might be due to the fact that the poultry farmers benefited by various training programmes organized by poultry department and they

might have more contacts with poultry specialists for obtaining sanitation practices.

These findings are in line with the findings of Mithyalagan(1997).

5.3.3.10 Adoption of recommended record keeping and marketing practices by the poultry farmers

The adoption of recommended poultry farming practices by the poultry farmers were measured for all the seven important practices of record keeping and marketing. The data in table 5.3.3.10 and Fig. 35 indicate that out of seven practices of record keeping and marketing, “keeping records of poultry feed consumption” adopted by poultry farmers was occupied the highest position (85.87 MPS), hence it was ranked first.

The second, third, fourth, fifth and sixth, ranks were awarded to the practices “record of bird mortality” (82.79 MPS), “keeping record of health checkup and diseases” (81.06 MPS) “keeping one-self familiar with prices of poultry products” (76.60 MPS), “selling the product at appropriate time” (74.20 MPS) and “record of day-by-day expenditure” (68.50 MPS), respectively.

The last seventh rank was awarded to the least adopted practice “keeping one self aware of demand of poultry products” (76.02 MPS).

Table 5.3.3.10 Adoption of recommended record keeping and marketing practices by the poultry farmers

n= 200

S. No	Adoption items	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Keeping records of poultry feed consumption	86.90	85.29	85.42	85.87	I
2.	Record of bird mortality	79.76	85.29	83.33	82.79	II
3.	Record of day-by-day expenditure	71.43	63.24	70.83	68.50	VI
4.	Keeping one-self familiar with prices of poultry products	86.90	72.06	70.83	76.60	IV
5.	Keeping one self aware of demand of poultry products	72.62	61.76	66.67	67.02	VII
6.	Selling the product at appropriate time	77.38	76.47	68.75	74.20	V
7.	Keeping record of health checkup and diseases	85.71	72.06	85.42	81.06	III
	Overall	80.10	73.74	75.89	76.58	

The data in table 5.3.3.10 further depict that the large farmers were found to have highest adoption (80.10 MPS) whereas, lowest

adoption (73.74 MPS) of recommended record keeping and marketing practices of poultry farming was found among medium farmers.

The inferences might be drawn from the findings that the poultry farmers were found to have higher adoption of seven record keeping and marketing practices, they were adopted suitable marketing infrastructure and streamlining the marketing and distribution network.

These findings are supported by the findings of Patel *et al.* (1999-2000) and Sharma *et al.* (2000).

5.3.3.11 Practice-wise overall adoption of the poultry farmers about recommended poultry farming practices

Practice wise over all adoption of poultry farmers about recommended poultry farming practices was measured. To sum up the scores of all the major aspects of adoption the scores for the practices selected under each major aspect were summed up and have been presented in table 5.3.3.11.

The data in table 5.3.3.11 and Fig. 36 reveal that the highest adoption of poultry farmers was found about “disease management practices” (81.49 MPS), hence it was ranked first. The second and third ranks were assigned to the “feeding practices” (81.43 MPS) and “equipment and spacing practices” (80.99 MPS), respectively.

The practices “watering practices”, “litter management practices”, “temperature & light regulation practices”, “brooding practices”, “record keeping and marketing practices”, and “sanitation practices” were obtained the 80.46, 79.96, 79.94, 77.27, 76.57 and 76.18 MPS and ranks were assigned fourth, fifth, sixth, seventh, eighth and ninth, respectively.

The lowest rank was awarded to the practice “chick procurement practices” (70.25 MPS).

Table 5.3.3.11 Practice-wise comparison of overall adoption of recommended poultry farming practices by the poultry farmers

n = 200

S. No	Major practices of adoption	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1	Chick procurement practices	71.13	69.48	70.31	70.25	X
2	Brooding practices	77.60	79.01	75.19	77.27	VII
3	Litter management practices	82.01	79.41	78.47	79.96	V
4	Temperature & light regulation practices	78.57	82.98	77.68	79.74	VI
5	Feeding practices	79.88	83.38	81.04	81.43	II
6	Watering practices	79.52	78.53	83.33	80.46	IV
7	Equipment and spacing practices	79.46	83.82	79.69	80.99	III
8	Disease management practices	80.36	85.48	78.64	81.49	I
9	Sanitation practices	78.17	75.73	74.65	76.18	IX
10	Record keeping and marketing practices	80.18	73.74	75.89	76.57	VIII
	Overall	78.68	79.16	77.48	78.43	

Regarding different categories of poultry farmers, the large, and medium poultry farmers were having maximum adoption about the practice “litter management practices” and “disease management practices” and obtained MPS 82.01, and 85.48, respectively whereas, small poultry farmers were having maximum adoption scores about “watering practices” (83.33 MPS).

The lowest adoption scores of large, medium and small poultry farmers were found about the “chick procurement practices” and obtained MPS 71.13, 69.48 and 70.31, respectively.

The data in table 5.3.3.11 also indicate that almost all the medium poultry farmers were having higher adoption (79.16 MPS) about all equipment and spacing practices. All small farmers were having lower adoption (77.48 MPS) about all the tenth practices.

These findings are in line with the findings of Kavadi *et al.* (1997-98), Patel and Acharya (1997-98).

5.4 Contribution of poultry farming in overall economy of poultry farmers

Land and poultry have traditionally been two basic income yielding assets of farmers. The crop farming is influenced by vagaries of nature. The rainfall which is often uncertain and erratic has made small and marginal farmers plight miserable. It is therefore, important to provide employment to the small and marginal farmers for generating additional income to help them to improve their standard of living. The poultry farming is one of enterprise plays an important role especially in the rural economy.

On this ground, it is very necessary to examine the contribution of the poultry component in the overall economic conditions of the farmers. The present investigation was therefore, carried out with one of its objectives to know the contribution of poultry on overall economic condition of the farmers. For income

contribution the year 2013-2014 was contribute and the response from poultry farmers about this purpose were recorded.

Table 5.4 Economic contribution of poultry farmers

n = 200

S.No.	Categories of poultry farmers	Perceived income (I ₁)			Cash income (I ₂)			Actual income (I ₃)		
		Mean (%)	S.D.	C.V. (%)	Mean (%)	S.D.	C.V. (%)	Mean (%)	S.D.	C.V. (%)
1.	Small	94.29	0.69	0.74	56.60	4.20	7.42	22.05	6.76	30.63
2.	Medium	94.07	0.91	0.96	56.96	15.14	26.57	20.29	11.73	57.81
3.	Large	94.41	0.55	0.59	55.61	6.22	11.19	21.47	8.06	37.53

The data in Table 5.4 and Fig. 37 reveal that the average economic contribution from poultry farmers as perceived by the different categories *i.e.* small, medium and large poultry farmers was 94.29, 94.07 and 94.41 per cent of the gross income from all sources, respectively. There was high variation in the income perceived by respondents as evident from the coefficient of variation values ranging from 0.59 to 0.74 per cent in different categories of poultry farmers. It was just as percent perception of the poultry farmers that the contribution of poultry component in total income was assessed.

In order to estimate this on the basis of actual cash money received from the poultry farming when measured in terms of cash

income (I_2). It was found that in case of small farmers, the contribution was 56.60 ± 4.20 per cent with coefficient of variation 7.42 per cent whereas, in case of medium farmers it was 56.96 ± 15.14 per cent with coefficient of variation 26.27 per cent. The value of I_2 indicating percent contribution of income from poultry farming to the gross income was 55.61 ± 6.22 per cent for large poultry farmers with 11.19 per cent coefficient of variation. From the data, we may conclude that income perceived by the respondents is higher than the actual income received in case of all the categories of the poultry farmers. It was found that the small farmers had relatively lower income than medium and large farmers.

The money spent on poultry farming when subtracted from the money received from poultry farming may perhaps give a better estimate of the income when examined on this perspective through I_3 indicates the actual income. In case of small farmers, it was 22.05 ± 6.76 per cent whereas corresponding figures for medium and large farmers were 20.29 ± 11.73 and 21.27 ± 8.06 per cent, respectively. Indicating that in case of small, medium and large farmers the actual contribution was much less than what they perceived. Again there was a high variability ranging from 30.63 per cent (small farmers) to 37.53 per cent (large farmers).

From the above discussion, it could be concluded that the poultry farming contributed about 21.27 per cent to 22.05 per cent to the total income of the respondents. The small respondents who were observing less income from poultry rearing could increase the contribution of poultry farming in their total income by adopting suitable strategies and improved management practices.

5.5 Constraints perceived by the poultry farmers in adoption of recommended poultry farming practices

The constraints in adoption of recommended poultry farming practices encountered by the farmers referred to bottlenecks which decelerate the adoption of recommended poultry farming practices. The constraints could be various types and might have been perceived by the farmers on the different priority basis.

As mentioned earlier, the adoption of recommended poultry farming practices was reported to be substantial, thus, it was considered desirable to determine. The major constraints, which hindered the adoption of recommended poultry farming practices by the different categories of poultry farmers were studied.

To determine the perceived constraints, major aspects were identified for this investigation. The data about the constraints perceived by the farmers were weighed on a three point continuum viz. most important, important and least important with their

weightage as 3, 2 and 1, respectively, depending upon the nature of the constraints from the view point of the poultry farmers. The mean per cent score under each of the constraints was computed about the eight major aspects and their ranks were assigned accordingly. The various constraints as perceived by all the poultry farmers of respective categories under in the study area are given as.

5.5.1 CONSTRAINTS FACED BY THE POULTRY FARMERS IN ADOPTION OF THE RECOMMENDED POULTRY FARMING PRACTICES

Regarding the constraints of poultry farmers about the recommended poultry farming practices have been presented in table 5.5.1

The data in table 5.5.1 and Fig. 38 reveal that regarding constraints of poultry farmers, 181 respondents (89.52 per cent) were having medium constraints whereas, 10 (7.71 per cent) and 5 (2.77 per cent) of respondents, were having high and low constraints respectively about recommended poultry farming practices.

Table 5.5.1 Constraints faced by the poultry farmers in adoption of the recommended poultry farming practices

n= 200 (Multiple response)

S.No.	Constraints	Category of poultry farmers						Pooled	
		Large		Medium		Small			
		f	%	f	%	f	%	f	%
1.	Low (<134.60)	1	1.19	2	2.94	2	4.17	5	2.77
2.	Medium (from 134.60 to 183.00)	79	94.05	62	91.18	40	83.33	181	89.52
3.	High (> 183.00)	4	4.76	4	5.88	6	12.50	10	7.71
	Total	84	100.00	68	100.00	48	100.00	200	100.00

$\bar{x} = 158.80$, $\sigma = 24.20$

F: Frequency, %: Percent

In case of constraints of large poultry farmers, 79 respondents (94.05 per cent) were having medium constraints whereas, 4 (4.76 per cent) and 1 (1.19 per cent) of respondents, were having high and low constraints respectively about recommended poultry farming practices.

In case of constraints of medium poultry farmers, 62 respondents (91.18 per cent) were having medium constraints whereas, 4 (5.88 per cent) and 2 (2.94 per cent) of respondents, were having high and low constraints respectively about recommended poultry farming practices.

In case of constraints of small poultry farmers, 40 respondents (83.33 per cent) were having medium constraints whereas, 6 (12.50 per cent) and 2 (4.17 per cent) of respondents

were having high and low constraints respectively about recommended poultry farming practices.

5.5.2 Category-wise comparison between constraints faced by different categories of poultry farmers in adoption of the recommended poultry farming practices

It is the general notion among the people that the constraint about the recommended poultry farming practices varies in different categories of farmers. With this view in mind a comparison was made in the recommended poultry farming practices of different categories of farmers by applying 'Z' test. The statistical data regarding this aspect have been presented in Table 5.5.2

Table 5.5.2 Category-wise comparison between constraints faced by different categories of poultry farmers in adoption of the recommended poultry farming practices

n= 200 (Multiple response)

S.No.	Category one	Category two	Mean per cent score		“Z” value
			Category one	Category two	
1.	Large farmers (N=84)	Medium farmers (N=68)	161.64	161.35	0.51 NS
2.	Large farmers (N=84)	Small farmers (N=48)	161.64	162.82	1.85 NS
3.	Medium farmers (N=68)	Small farmers (N=48)	161.35	162.82	3.42**

****** Significant at 0.01 level of probability.

NS= Non significant

The data in the table 5.5.2 show that the calculated value of 'Z' for large and medium farmers was 0.51, which was statistically non-significant at one per cent level of probability.

Thus, it may be concluded that there was a non-significant difference between the constraints of large and medium farmers about recommended poultry farming practices. Hence, the null hypothesis $H_{03.1}$ was accepted. Similarly a non-significant difference between large and small farmers has also been observed with regard to the constraints of recommended poultry farming practices, as the calculated value of 'Z' was 1.85, which was non-significant at one per cent level of probability. Hence the null hypothesis $H_{03.2}$ was also accepted.

The data in table 5.5.2 further elucidate that the calculated value of 'Z' for medium and small farmers regarding recommended poultry farming practices was significant (3.42) at one per cent level of probability. Hence the null hypothesis $H_{03.3}$ was rejected.

The 'Z' values indicate that there was a non-significant difference between the constraints of large and medium farmers, and large and small farmers, and significant difference between the constraints of medium and small farmers about recommended poultry farming practices.

Similar findings have also been reported by Jat and Yadav (2009).

5.5.3 Technological constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

The data in table 5.5.3 and Fig. 39 reveal that “Lack of knowledge in preparing balanced ration” was realized as an important constraint by poultry farmers with MPS 82.93, such constraints had also perceived as most important by the different categories of poultry farmers *i.e.* large, medium and small poultry farmers and was accorded first rank.

This was followed by the constraint like “Lack of knowledge about reputed hatcheries”, “Lack of skill in preparing brooder house” and “Lack of knowledge about disease preventive measures” with MPS 78.10, 77.28 and 76.94, respectively. These constraints assigned second, third and fourth ranks by the poultry farmers

**Table 5.5.3 Technological constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers
n= 200 (Multiple response)**

S. No.	Constraints	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Lack of knowledge regarding improved breeds of broilers	73.41	72.06	75.00	73.49	IX
2.	Lack of knowledge about reputed hatcheries	75.79	77.94	80.56	78.10	II
3.	Lack of skill in preparing brooder house	80.16	75.98	75.69	77.28	III
4.	Lack of knowledge in preparing balanced ration	84.13	84.80	79.86	82.93	I
5.	Lack of knowledge about important diseases of hatchery	73.41	75.98	77.08	75.49	VII
6.	Lack of knowledge about proper use of poultry medicines	63.49	65.69	70.14	66.44	XII
7.	Lack of skill in performing vaccination	70.63	67.65	68.75	69.01	XI
8.	Lack of knowledge about differential temperature requirements	75.00	78.43	76.39	76.61	V
9.	Lack of knowledge about feed requirement of different age groups	74.21	72.55	72.22	72.99	X
10.	Lack of knowledge about disease preventive measures	78.17	76.96	75.69	76.94	IV
11.	Frequent incidence of diseases	75.79	75.00	77.08	75.96	VI
12.	Lack of training to carrying out vaccination	72.22	76.47	75.69	74.79	VIII
13.	Lack of bio-security measures	65.08	62.75	64.58	64.14	XIII
	Overall	73.96	74.02	74.52	74.17	

The fifth, sixth, seventh, eighth, ninth, tenth, eleventh and twelfth ranks were assigned”, to the constraints “Lack of knowledge about differential temperature requirements” (76.61 MPS), “Frequent incidence of diseases” (75.96 MPS), “Lack of knowledge about

important diseases of hatchery”, (75.49 MPS) “Lack of training to carrying out vaccination”, (74.79 MPS), “Lack of knowledge regarding improved breeds of broilers”, (73.49 MPS), “Lack of knowledge about feed requirement of different age groups” (72.99 MPS), “Lack of skill in performing vaccination”, (69.01 MPS) and “Lack of knowledge about proper use of poultry medicines” (66.44 MPS), respectively.

The lowest rank was awarded to “Lack of bio-security measures” (64.14 MPS).

It might be concluded that “Lack of knowledge in preparing balanced ration” was perceived as the most important technological constraints whereas “Lack of bio-security measures” was perceived by the poultry farmers as a least important constraints.

These findings are in agreement with those of Verma (1996) and Khandekar and Sharma (2000).

5.5.4 Infrastructural constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

The data in table 5.5.4 and Fig. 40 reveal that “Shortage of floor space” was realized as important constraints by poultry farmers with 85.67 MPS, such constraints had also perceived as most

important by the different categories of poultry farmers *i.e.* large, medium and small poultry farmers and was accorded first rank.

This was followed by the constraint like “Poor feed storage facilities”, “Poor housing facilities”, “Shortage of feeding and watering space” and “Non availability of scientific housing structures” with 84.72, 79.94, 74.89 and 59.55 MPS respectively. These constraints assigned second, third, fourth and fifth ranks by the poultry farmers.

The lowest rank was awarded to “lack of rodents and predator proof houses” (56.46 MPS).

It might be concluded that “Shortage of floor space” was perceived as the most important infrastructural constraint whereas “lack of rodents and predator proof house” was perceived by the poultry farmers as a least important constraint.

**Table 5.5.4 Infrastructural constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers
n= 200 (Multiple response)**

S. No.	Constraints	Category of poultry farmers				
		Mean per cent score				Rank
		Large	Medium	Small	Pooled	
1.	Shortage of floor space	86.11	84.80	86.11	85.67	I
2.	Poor housing facilities	79.76	80.88	79.17	79.94	III
3.	Poor feed storage facilities	85.32	84.80	84.03	84.72	II
4.	Non availability of scientific housing structures	58.73	58.82	61.11	59.55	V
5.	Lack of rodents and predator proof houses	56.35	55.39	57.64	56.46	VI
6.	Shortage of feeding and watering space	74.60	76.47	73.61	74.89	IV
	Overall	73.48	73.53	73.61	73.54	

The findings are supported by the findings of Ghosh and Chand (2001) and Gogoi and Talukdar (2001).

5.5.5 Economic constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

The data in table 5.5.5 and Fig. 41 reveal that “Wastage of feed by birds” was realized important constraint by poultry farmers with 84.42 MPS, such constraints had also perceived as most important by the different categories of poultry farmers *i.e.* large, medium and small poultry farmers and was accorded first rank.

This was followed by the constraints like “High cost of chicks”, “High sale tax imposed by the Govt.”, “High mortality” “High cost of feed ” and “ High rate of interest on loans”, “Difficulty in getting loans” and “High cost of transportation” with 84.39, 81.82, 78.92, 77.10, 76.45, 75.46 and 72.50 MPS respectively. These constraints assigned second, third, fourth , fifth, sixth, seventh and eighth ranks by the poultry farmers.

The lowest rank was awarded to “Poor financial condition” (70.49MPS).

It might be concluded that “Wastage of feed by birds” was perceived as the most important economic constraint whereas “Poor financial condition” was perceived by the poultry farmers as a least important constraint.

Table 5.5.5 Economic constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

n= 200 (Multiple response)

S. No.	Constraints	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	High cost of feed	75.79	78.43	77.08	77.10	V
2.	Poor financial condition	70.24	71.08	70.14	70.49	IX
3.	High sale tax imposed by the Govt.	80.56	80.88	84.03	81.82	III
4.	High cost of chicks	84.13	84.31	84.72	84.39	II
5.	Difficulty in getting loans	76.19	74.51	75.69	75.46	VII
6.	High cost of transportation	73.02	71.57	72.92	72.50	VIII
7.	High rate of interest on loans	76.98	75.98	76.39	76.45	VI
8.	Wastage of feed by birds	84.92	84.31	84.03	84.42	I
9.	High mortality	78.97	77.94	79.86	78.92	IV
	Overall	77.87	77.67	78.32	77.95	

The findings are in agreement with the findings of Sapkota and Ray (1997), Singh and Chahal (2000), Sharma *et al.* (2000) and Gogoi and Talukdar (2001).

5.5.6 Marketing constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

The data in table 5.5.6 and Fig. 42 reveal that “Lack of a proper marketing structure” was realized as an important constraint by poultry farmers with MPS 82.48, such constraint had also perceived as most important by the different categories of poultry farmers *i.e.* large, medium and small poultry farmers and was accorded first rank.

This was followed by the constraints like “Involvement of middlemen”, “Problem in birds marketing” and “No purchase of poultry product by govt. agency” with MPS 76.48, 76.35 and 75.76, respectively. These constraints assigned second, third and fourth ranks by the poultry farmers.

The fifth, sixth, seventh, eighth, ninth, tenth and eleventh ranks were assigned to the constraints like”, “Lack of co-operative societies for birds” (75.26 MPS), “High fluctuations in selling price” (74.15 MPS), “Non availability of transportation facilities in time”, (72.79 MPS) “Lack of govt. policy for poultry”, (72.01 MPS), “Shortage of local market”, (70.45 MPS), “High demand only in few months” (66.34 MPS) and “Non remunerative selling prices”, (64.95 MPS), respectively.

Table 5.5.6 Marketing constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

n= 200 (Multiple response)

S. No.	Constraints	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	High fluctuations in selling price	74.21	72.55	75.69	74.15	VI
2.	High demand only in few months	65.08	65.20	68.75	66.34	X
3.	Non remunerative selling prices	65.48	66.18	63.19	64.95	XI
4.	Shortage of local market	70.63	70.59	70.14	70.45	IX
5.	Involvement of middlemen	76.59	76.47	76.39	76.48	II
6.	Lack of a proper marketing structure	81.75	82.35	83.33	82.48	I
7.	Non availability of transportation facilities in time	72.22	72.55	73.61	72.79	VII
8.	Problem in marketing of eggs	65.48	63.24	63.89	64.20	XII
9.	Lack of co-operative societies for birds	74.60	75.49	75.69	75.26	V
10.	Problem in birds marketing	75.00	76.96	77.08	76.35	III
11.	No purchase of poultry product by govt. agency	75.00	74.51	77.78	75.76	IV
12.	Lack of govt. policy for poultry	73.02	70.10	72.92	72.01	VIII
	Overall	72.42	72.18	73.21	72.60	

The lowest rank was awarded to “Problem in marketing of eggs” (64.20 MPS).

It might be concluded that “Lack of a proper marketing structure” was perceived as the most important marketing constraint

whereas “Problem in marketing of eggs” was perceived by the poultry farmers as a least important marketing constraint.

The findings are supported by the findings of Sapkota and Ray (1997), Prakash *et al.* (2000), Gogoi and Talukdar (2001) and Rajput (2002).

5.5.7 Social constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

The data in table 5.5.7 and Fig. 43 reveal that “Serve criticism of poultry farmers from religious minded people” was realized as an important constraint by poultry farmers with MPS 79.05, such constraints had also perceived as most important by the different categories of poultry farmer *i.e.* large, medium and small poultry farmers and was assigned first rank.

Table 5.5.7 Social constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

S. No.	Constraints	n= 200 (Multiple response)				
		Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Lack of awareness among people about balanced human diet	74.21	74.02	73.61	73.95	II
2.	Vegetarian food habits of people	68.25	68.63	68.06	68.31	IV
3.	Consideration of poultry as a low grade vocation in the society	64.68	63.24	62.50	63.47	V
4.	Serve criticism of poultry farmers from religious minded people	78.17	78.43	80.56	79.05	I
5.	Pressure from nearby houses due to bad smell	67.86	68.63	71.53	69.34	III
	Overall	70.63	70.59	71.25	70.82	

This was followed by the constraints like “Lack of awareness among people about balanced human diet”, “Pressure from nearby houses due to bad smell” and “Vegetarian food habits of people” 73.95, 69.34 and 68.31 MPS, respectively. These constraints assigned second, third and fourth ranks by the poultry farmers.

The lowest rank was awarded to the constraint “Consideration of poultry as a low grade vocation in the society” (63.47 MPS).

It might be concluded that “Serve criticism of poultry farmers from religious minded people” was perceived as the most important social constraint whereas “Consideration of poultry as a low grade vocation in the society” was perceived by the poultry farmers as a least important constraint.

The findings are in agreement with the findings of Sathe (1996).

5.5.8 Input related constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

The data in table 5.5.8 and Fig. 44 reveal that “High mortality of chicks” was realized as important constraints by poultry farmer with 84.76 MPS, such problem had also perceived as most important by the different categories of poultry farmer *i.e.* large, medium and small poultry farmers and was accorded first rank.

This was followed by the constraint like “Spurious drugs”, “Low egg production by layers” and “Non availability of vaccines and other medicines in time” with MPS 83.26, 79.94 and 79.42 MPS,

respectively. These constraints assigned second, third and fourth ranks by the poultry farmers.

The fifth, sixth, seventh, eighth, ninth, tenth and eleventh ranks were assigned, to the constraint “Non availability of chicks in time” (77.70 MPS), “Non availability of chicks from local areas” (75.82 MPS), “Poor quality of feed” (74.80 MPS), “Poor quality of chicks”, (73.42 MPS) “Scarcity of feed”, (72.00 MPS), “Paucity of water”, (64.75 MPS) and “Scarcity of balanced feed seed” (62.62 MPS), respectively.

The lowest rank was awarded to “Small size egg of layers” (59.79 MPS).

Table 5.5.8 Input related constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

n= 200 (Multiple response)

S. No.	Constraints	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Poor quality of chicks	73.81	73.53	72.92	73.42	VIII
2.	Scarcity of feed	71.43	73.04	71.53	72.00	IX
3.	Paucity of water	64.68	65.69	63.89	64.75	X
4.	Non availability of chicks in time	77.38	77.94	77.78	77.70	V
5.	Non availability of vaccines and other medicines in time	78.57	78.43	81.25	79.42	IV
6.	Spurious drugs	83.33	83.82	82.64	83.26	II
7.	High mortality of chicks	84.13	83.33	86.81	84.76	I
8.	Poor quality of feed	74.60	75.49	74.31	74.80	VII

9.	Non availability of chicks from local areas	75.79	75.98	75.69	75.82	VI
10.	Low egg production by layers	80.56	79.41	79.86	79.94	III
11.	Small size egg of layers	61.11	57.84	60.42	59.79	XII
12.	Scarcity of balanced feed seed	63.10	62.25	62.50	62.62	XI
	Overall	74.04	73.90	74.13	74.02	

It might be concluded that “High mortality of chicks” was perceived as the most important input related constraint whereas “small size egg of layers” was perceived by the poultry farmers as a least important constraints.

The findings are in agreement with findings of Rammana *et. al.*(2000).

5.5.9 Power supply related constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

The data in table 5.5.9 and Fig. 45 reveal that “Poor performance of non electric power sources” was realized as an important constraint by poultry farmer with 78.36 MPS, such constraint had also perceived as most important by the different categories of poultry farmer *i.e.* large, medium and small poultry farmers and was accorded first rank.

Table 5.5.9 Power supply related constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

n= 200 (Multiple response)

S. No.	Constraints	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	High rates of power charges	76.98	79.90	76.39	77.76	II
2.	Difficulty in getting power connection	71.83	74.02	72.22	72.69	IV
3.	Unscheduled power cuts	62.70	61.76	64.58	63.01	VI
4.	Long hours of power cuts	76.59	77.45	78.47	77.50	III
5.	Poor performance of non electric power sources	77.78	77.45	79.86	78.36	I
6.	High fluctuations in voltage power supply	69.84	68.63	68.75	69.07	V
	Overall	72.62	73.20	73.38	73.07	

This was followed by the constraint like “high rates of power charges”, “Long hours of power cuts”, “Difficulty in getting power connection” and “High fluctuations in voltage power supply” with 77.76, 77.50, 72.69 and 69.07 MPS respectively. These constraints assigned second, third, fourth and fifth ranks by the poultry farmers.

The lowest rank was awarded to the constraint “Unscheduled power cuts” (63.01 MPS).

It might be concluded that “Poor performance of non electric power sources” was perceived as the most important power supply constraint whereas “Unscheduled power cuts” was perceived by the poultry farmers as a least important constraint.

The findings are supported by the findings of Sapkota and Ray (1997) and Vijayaraghvan (1997-98).

5.5.10 Miscellaneous constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

The data in table 5.5.10 and Fig. 46 reveal that “Un-availability of veterinary doctors in time” was realized as an important constraint by poultry farmers with 80.03 MPS, such constraint had also perceived as most important by the different categories of poultry farmer *i.e.* large, medium and small poultry farmers and was accorded first rank.

This was followed by the constraint like “High degree of risk involved”, “Cumbersome work with live birds” and “Poor extension services” with MPS 79.15, 78.40 and 75.30 MPS, respectively. These constraint assigned second, third and fourth ranks by the poultry farmers.

The fifth, sixth, seventh, eighth and ninth ranks were assigned, to the constraint “Sale market at distance place” (72.60 MPS), “No availability of trained man power” (72.24 MPS), “Problematic environment” (71.02 MPS), “No minimum support price

(for sale) by govt.”, (70.50 MPS) and “Lack of literature on poultry in simple language”, (70.29 MPS), respectively.

The lowest rank was awarded to “Uncertainty of vocation” (69.80 MPS).

Table 5.5.10 Miscellaneous constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

n= 200 (Multiple response)

S. No.	Constraints	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	High degree of risk involved	79.37	78.92	79.17	79.15	II
2.	Cumbersome work with live birds	78.57	77.45	79.17	78.40	III
3.	Uncertainty of vocation	69.05	68.14	72.22	69.80	X
4.	Problematic environment	71.43	70.10	71.53	71.02	VII
5.	Lack of literature on poultry in simple language	70.63	70.10	70.14	70.29	IX
6.	Poor extension services	75.00	74.51	76.39	75.30	IV
7.	Un-availability of veterinary doctors in time	79.76	81.86	78.47	80.03	I
8.	Sale market at distance place	72.62	71.57	73.61	72.60	V
9.	No availability of trained man power	71.83	70.59	74.31	72.24	VI
10.	No minimum support price (for sale) by govt.	70.24	67.65	73.61	70.50	VIII
	Overall	73.85	73.09	74.86	73.93	

It might be concluded that “Un-availability of veterinary doctors in time” was perceived as the most important miscellaneous constraint whereas “Uncertainty of vocation” was perceived by the poultry farmers as a least important constraint.

The findings are in agreement with the findings of Rammana *et.al.* (2000).

5.5.11 Relative position of various constraints as perceived by the different categories of poultry farmers

The relative positions or the degree of importance of various constraint as perceived by the different categories of the poultry farmers were worked out on the basis of mean percentage of farmers response who expressed the severity of constraints which were presented in table 5.5.11

Table 5.5.11 Relative position of various constraints as perceived by the poultry farmers
n= 200 (Multiple response)

S. No.	Constraints	Category of poultry farmers				
		Mean per cent score				
		Large	Medium	Small	Pooled	Rank
1.	Technological constraints	73.96	74.02	74.52	74.50	II
2.	Infrastructural constraints	73.48	73.53	73.96	73.66	V
3.	Economic constraints	77.86	77.67	78.32	77.95	I
4.	Marketing constraints	72.42	72.18	73.21	72.60	VII
5.	Social constraints	70.63	70.59	71.25	70.82	VIII

6.	Input related constraints	74.04	73.65	74.13	73.94	III
7.	Power supply related constraints	72.62	73.20	73.38	73.07	VI
8.	Miscellaneous constraints	73.84	73.09	74.86	73.93	IV
	Overall	73.61	73.49	74.2	73.81	

A critical examination of data presented in table 5.5.11 and Fig. 47 reveal that economic constraints have possessed the first position as perceived by 77.95 per cent poultry farmers. The second position occupied by technical constraints (74.50 per cent), which were followed by Input related constraints (73.94 per cent), miscellaneous constraints (73.93 per cent), Infrastructural constraints (73.66 per cent), Power supply related constraints (73.07 per cent), Marketing constraints (72.60 per cent) and social constraints (70.82 per cent). Within three categories of poultry farmers viz., large, medium and small farmers, almost similar position were occupied with slight changes in their percentage scores.

5.6 Future prospects of poultry improvement

With the commercialization of poultry and movement towards sophistication, the development of poultry in view of recent receding trend of losses and increased cost of poultry farming seems to be a challenging task. Whenever there is a temporary high cost of layer farming, the question of future prospects for the business comes uppermost in the

minds of many producers. The layer farming is such a vocation that every producer comes more or less in direct competition with one another. As one of the objectives of the present study was to explore the future prospects of poultry for making this vocation more remunerative, an attempt was made to record the respondents' views on the subject in an unstructured way. The responses have been pooled up and presented in the summarized form as follows:

1. The local availability of feed ingredients and other feeding material is a positive point coupled with the benefits of lower labour cost which can make our poultry products at least 10-12 percent cheaper in the national as well as international market. It depicts bright prospectus of poultry if properly planned, implemented and managed.
2. It has been found that many well educated people and a certain section of intelligencia have made their way into the profession of poultry farming whose skill and scientifically sound mind set up with profound decision making potential can properly be utilized thereby enriching and widening the prospects of poultry.
3. Labour is quite cheap and moreover the construction material is not so costly and is locally and easily available in the study area. This depicts a great potential in the enterprise in the days to come.
4. It was recorded that besides commercial poultry farming, many indigenous birds are also being reared by the rural and semi-urban people under free-range system. Indigenous birds are selfless creatures; do not enjoy any proper feed and health cover. Such birds can be recommended and reared in

the sheds under deep-litter system to fight the menace of diseases thereby making poultry farming a more remunerative venture.

5. For the improvement of indigenous breeds, good chick have has been found to be the quickest and time tested method bringing 3-fold increase in egg and broiler meat farming.
6. Generally labour is drawn from family members in most of the cases. The unskilled labour force can be properly trained to meet out the requirements of family besides complementing the overall farming scenario of the state.
7. There are many people in rural area living below poverty line and reeling under malnutrition. Such people can act as labour force for brightening the prospects of poultry in the potential areas by ensuring a step forward towards better prospects.
8. Poultry farming operations can be reintroduced as an item of wide scope for reducing chick losses due to many reasons. If chick mortality and morbidity are checked, surely poultry vocation would turn more remunerative.
9. There are rich prospects of reducing the losses caused by various diseases like bird flue, rani khet etc. keeping proper sanitary conditions by use of ethno veterinary products that has been shown to be effective.
10. There is a wide scope to search for proper supplementary course grains or other energy rich feedstuffs.
11. Much scope lies in use of predator proof walls and doors in the sheds to make the vocation more remunerative by minimizing the losses.
12. Feed wastage can be avoided by proper use of feeders and by making improvements in the clay pot drinkers the efficiency

of the drinkers can be recommended. This would definitely add remuneration to the enterprise.

13. Encouraging rural assemblies and marketing co-operatives that would aid in the selling the product in rural areas thereby making the venture more remunerative.
14. Demonstrating and encouraging use of non-motor transportation sources for the movement of poultry birds to the local market would definitely give a sign of relief to the poultry farmers
15. There are wide prospects of suitable marketing network for proper and timely disposal of the produce to make it more profitable venture.
16. Prospects can be widened by disseminating information about nutritional value of edible poultry products among the masses as a whole.
17. Development of rural infrastructure, in food milling, feed crushing; policy support marketing and processing has wide scope in the study area.
18. Proper utilization of poultry by-products is very crucial part to add remuneration to the venture. Because it has seen that they are not properly used but wasted. Rather they can be used to make feather meal, blood meal etc.
19. As many units have not been found economically viable and structurally sound, there is a lot of scope for improving these two parameters thereby enriching the prospects of poultry in the state.
20. There are wide prospects to improve the average returns in terms of values on different size groups for overcoming the related constraints.

21. Poultry vocation can be made more remunerative by providing information support system to the clients through various extension strategies.
22. As far as tomorrow is concerned, one must wonder whether the farming momentum could be maintained. However, forecast covering the next two decades indicates that the broiler performance in India could improve which offers immense scope of this vocation in the days to come.
23. Broiler meat is the cheaper meat available in the market. It is low in fat and cholesterol compared to other sources of meat. While poultry egg is the lonely sources of animal protein which can not be adulterated which enrich the prospects of poultry farming.
24. It may help export earn due to heavy demand of poultry and poultry products in international market.
25. Availability of poultry and poultry products in convenient consumer pack units in super bazaars, street corners, meat, shops even on pus carts.
26. A strong network demand and agricultural universities, central institutes and private establishments to provide necessary research and extent support system for growth and development.
27. Establishment of allied industries like compounded feed manufacturing, pharmaceuticals and biological equipments and machinery, poultry and food processing plants etc. in the country to promote primary business of poultry farming.
28. Poultry farming is eco-friendly, sustainable and profitable, ensures food, nutritional security and best means to solve gender issues in employment.

29. Flexible units sizes and less initial investment makes it easy for adoption by all sections of society, especially rural poor, marginal and landless laboures.
30. Backyard poultry keeping is one of the important resources for landless labour and those who do not possess cattle, sheep and goat.
31. Poultry farming is an all the year round business and the farmers get continuous show of income from generation to generation without much recurrent investment.
32. Poultry is the only sector which is capable of achieving exceptionally high growth rate in shortest possible time.
33. Poultry are biological machines converting inferior foods into superior foods (meat and eggs).
34. Poultry is the only affordable sects to be slaughter at home by resource poor farmers, as the price of other species are too high. There is no cultural or religious taboo in relation to the consumption of poultry and poultry products.

Looking to the better prospects of poultry development in this area, the following line of actions are suggested by considering the views of experts.

1. During investigation, it was found that majority of the poultry farmers were having non-descript birds. To improve the existing breeds, efforts need be made for upgrading of these birds and the improvement of existing birds could be achieved by using proven cock.
2. Mobile breeding services may be provided to the poultry farmers in those villages which are away from the road and where the transportation facilities are not available.

3. To encourage and motivate the poultry farmers about scientific poultry rearing, government should make adequate budget provisions for providing subsidies to those small and medium farmers who are willing to rear the poultry of recommended breeds.
4. To have better prospects of poultry development besides breeding components, regular and adequate supply of quality feed and concentrate is equally important.
5. Birds health case is another important aspects of poultry management. During investigation, it was found that there were many common diseases of poultry prevailing in the area. Many a times, the birds died even on account of very minor ailment.
6. The special vaccination campaign against infectious and contagious diseases must be taken to check out-break before the onset of rainfall. The veterinary department of the state government should provide free and timely vaccination facility in villages.
7. To have a check on high cost of veterinary medicines co-operative stores /shops should be started by the government so that poultry farmers could be benefited by these.
8. For controlling the disease, preliminary survey of the poultry farmers in the village should be done from time to time. The setting up of a polyclinic veterinary hospital in each block should be practiced so that disease like Raniket, bird flue and parasites could be controlled.
9. It was reported by the poultry farmers that they were unaware about government programme on poultry development, hence, greater publicity programmes should

be carried out through mass media like, T.V. and radio through various programmes like choupal, Krishi jagat etc.

10. An organized marketing of poultry and poultry products is of great importance for the poultry industry. For this, egg co-operative society should be established in the central villages of the cluster and these societies should be well connected with the main roads, so that neighbouring villagers could bring their egg to the society.

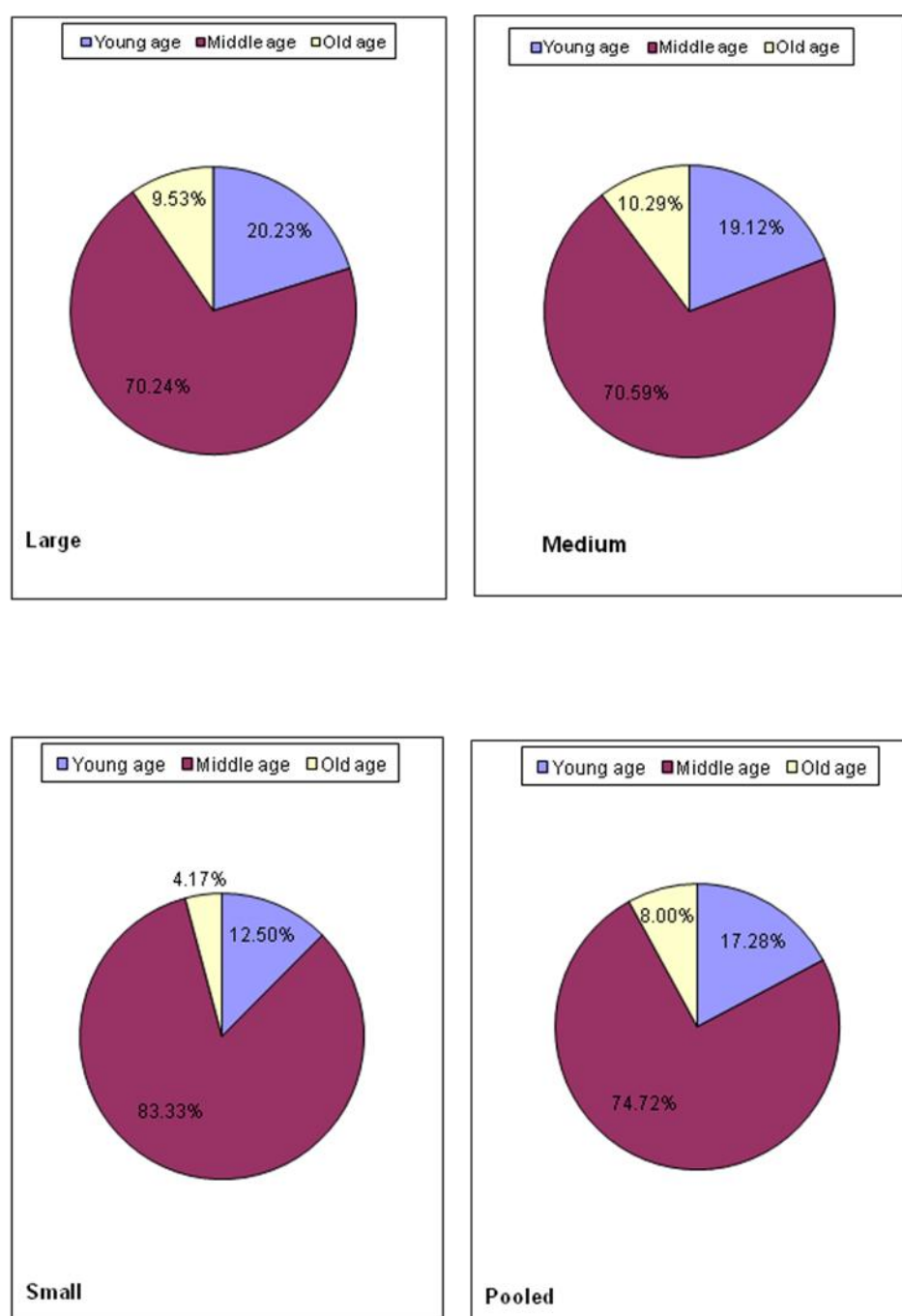


Fig. 2 Distribution of the poultry farmers according to age

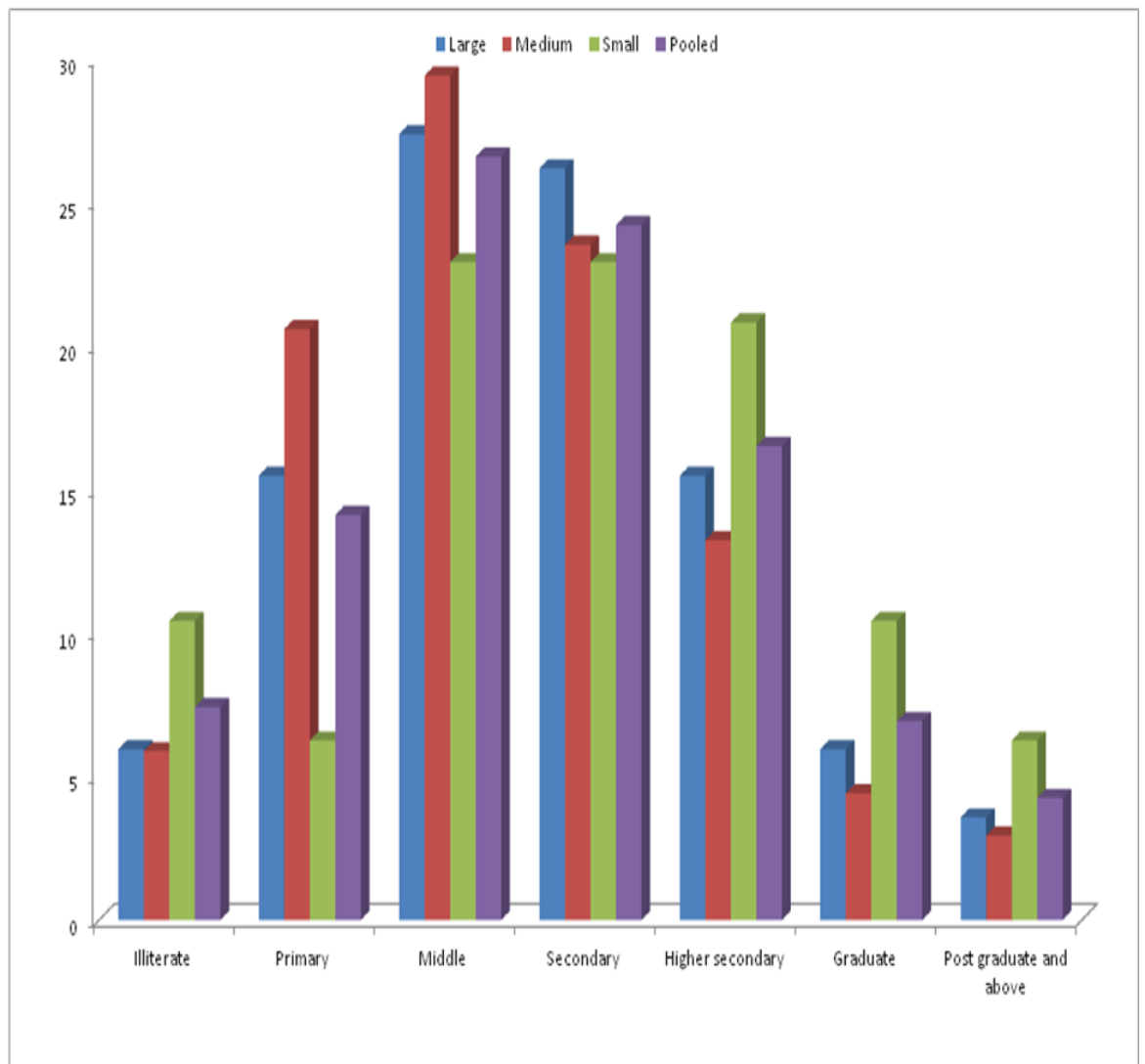


Fig. 3 Distribution of the poultry farmers according to education

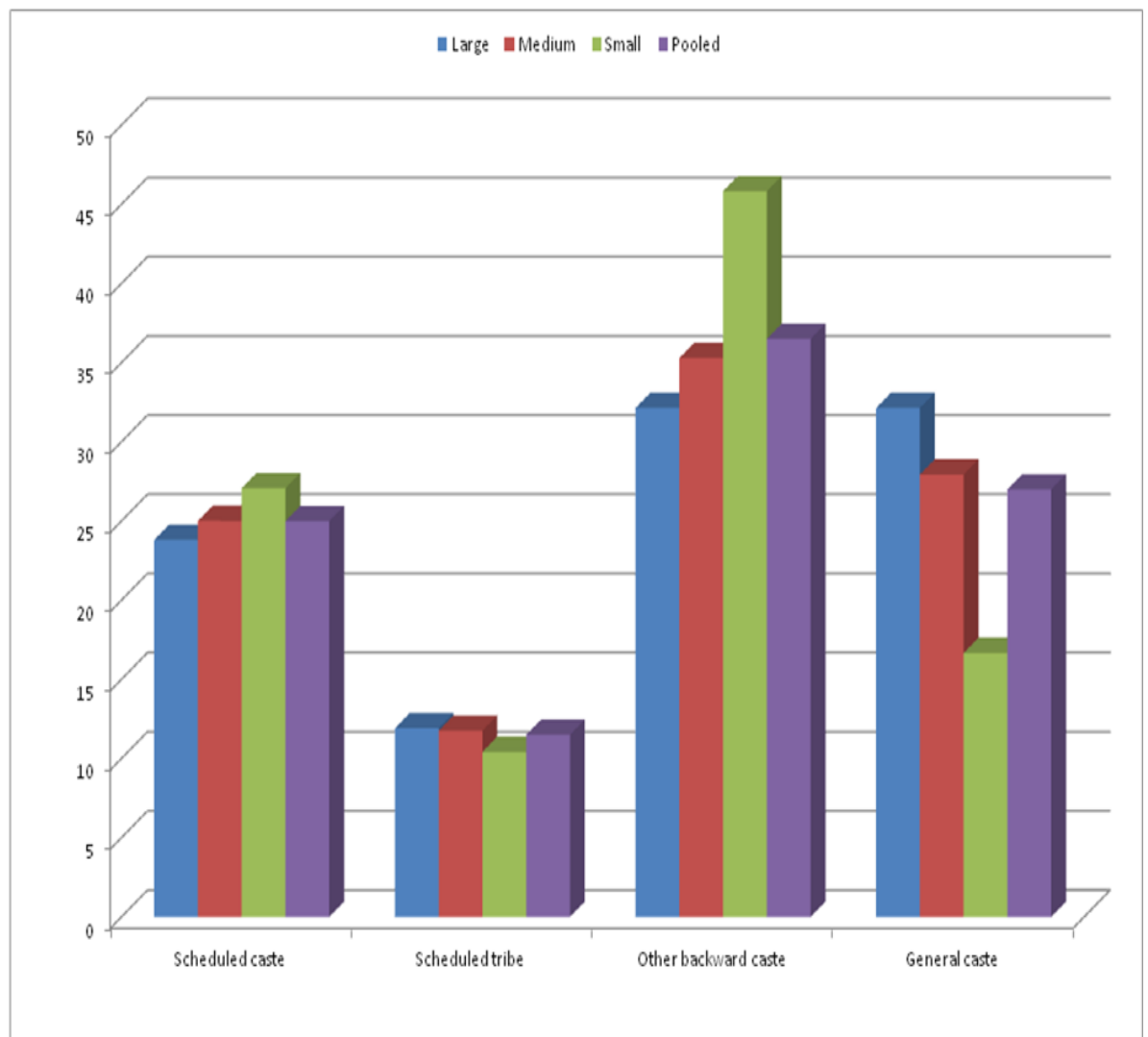


Fig. 4 Distribution of the poultry farmers according to caste

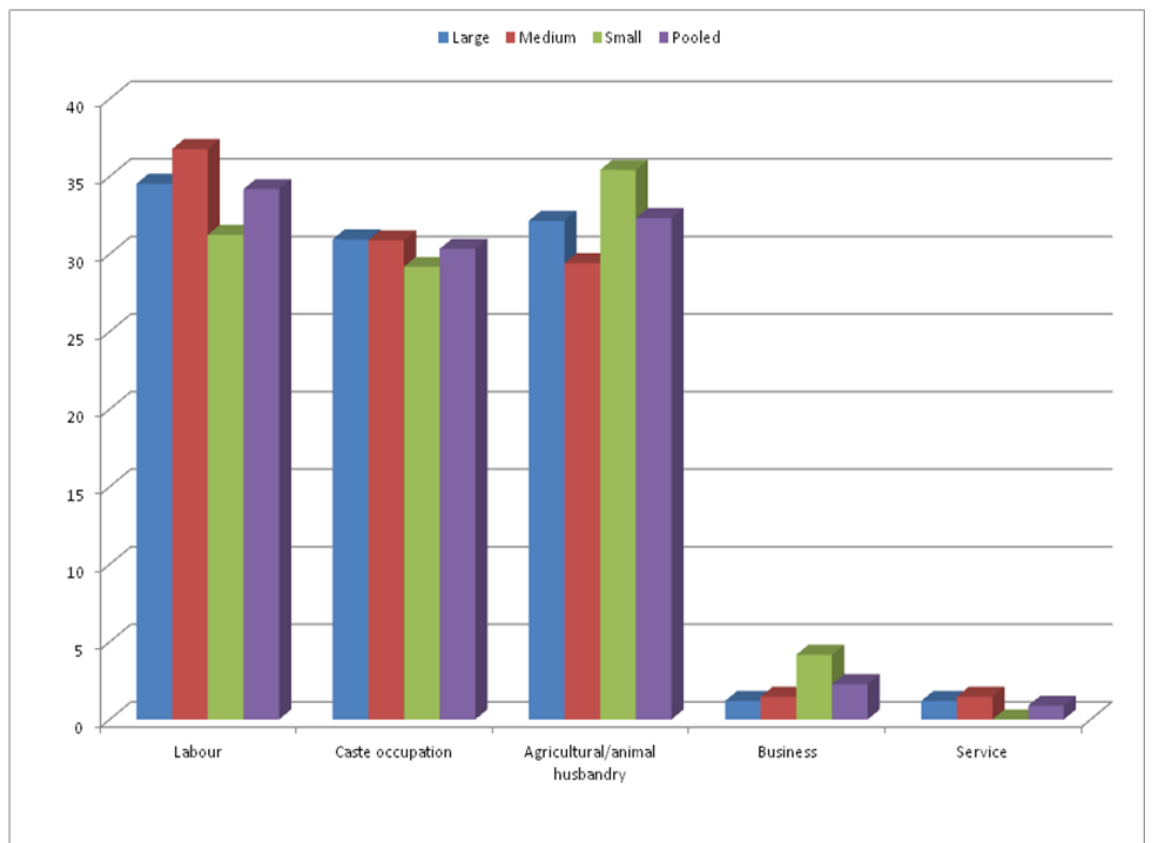


Fig. 7 Distribution of the poultry farmers according to occupation

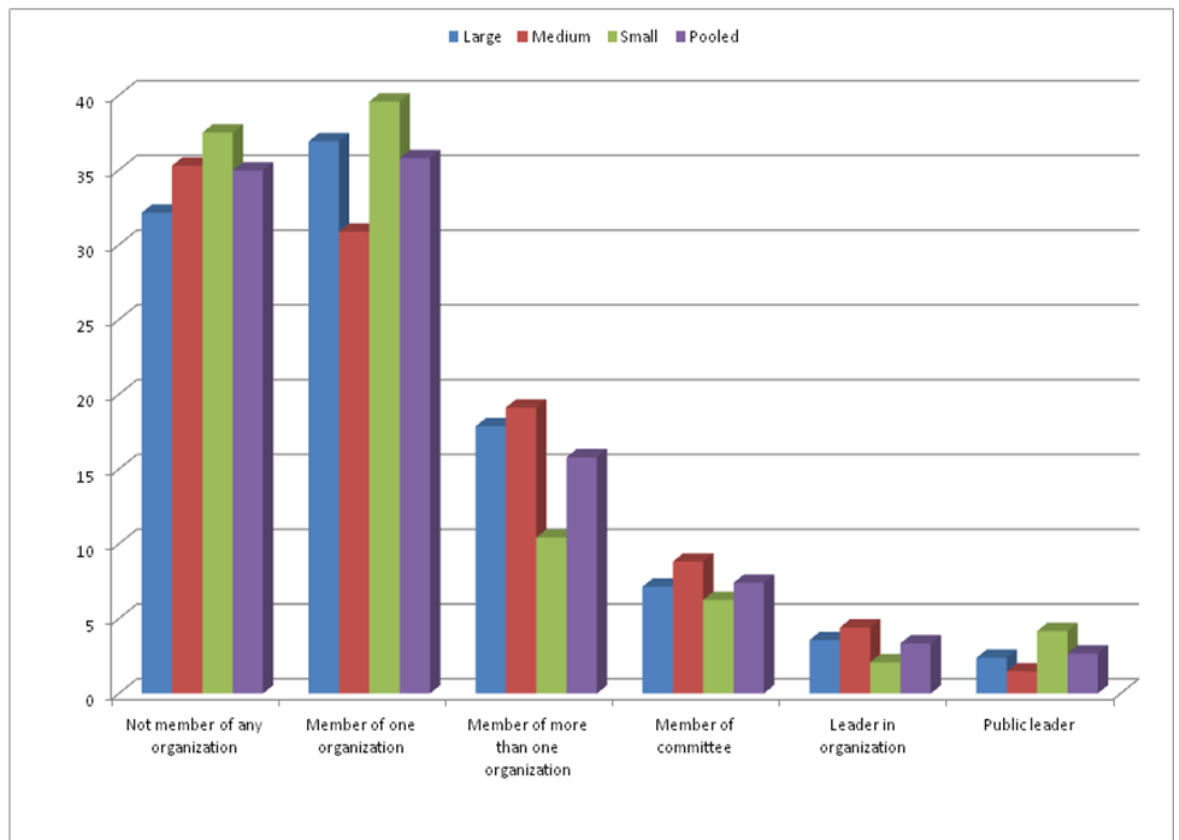


Fig. 8 Distribution of the poultry farmers on the basis of their social participation

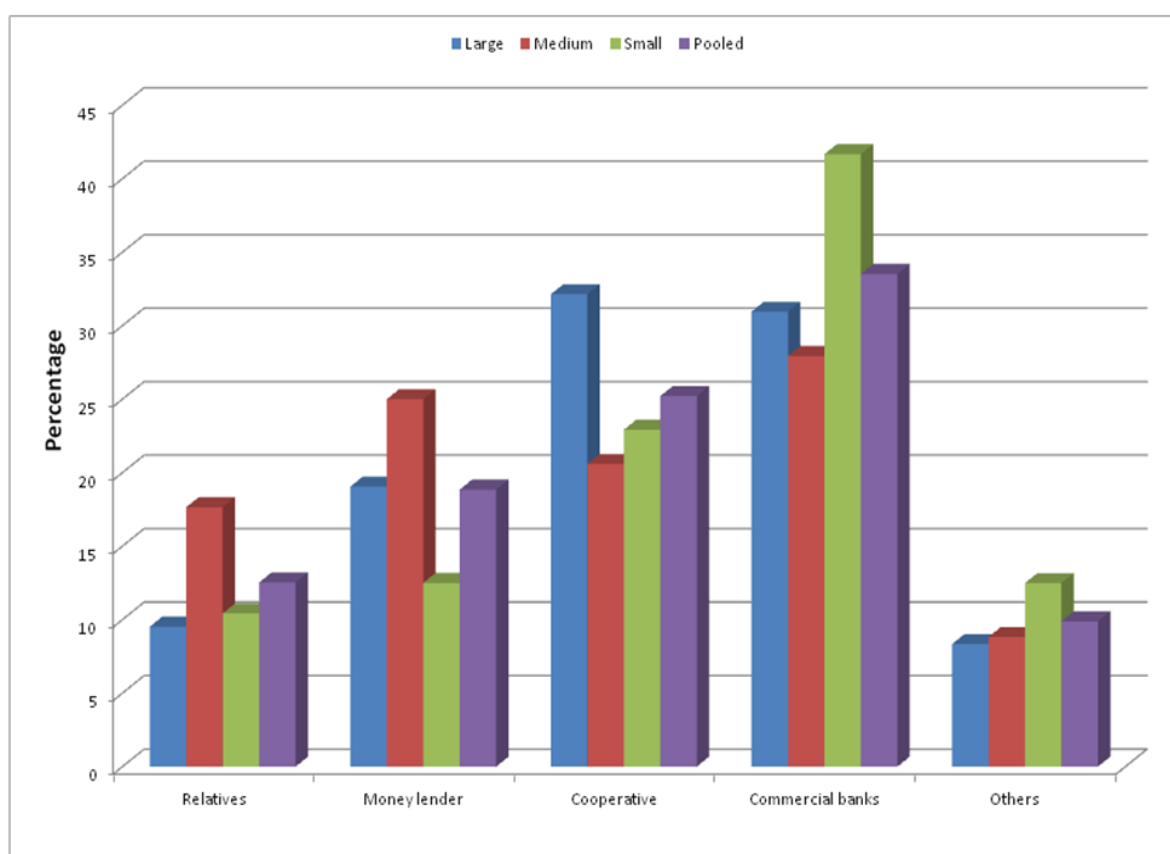


Fig. 9 Distribution of the poultry farmers on the basis of source of credit

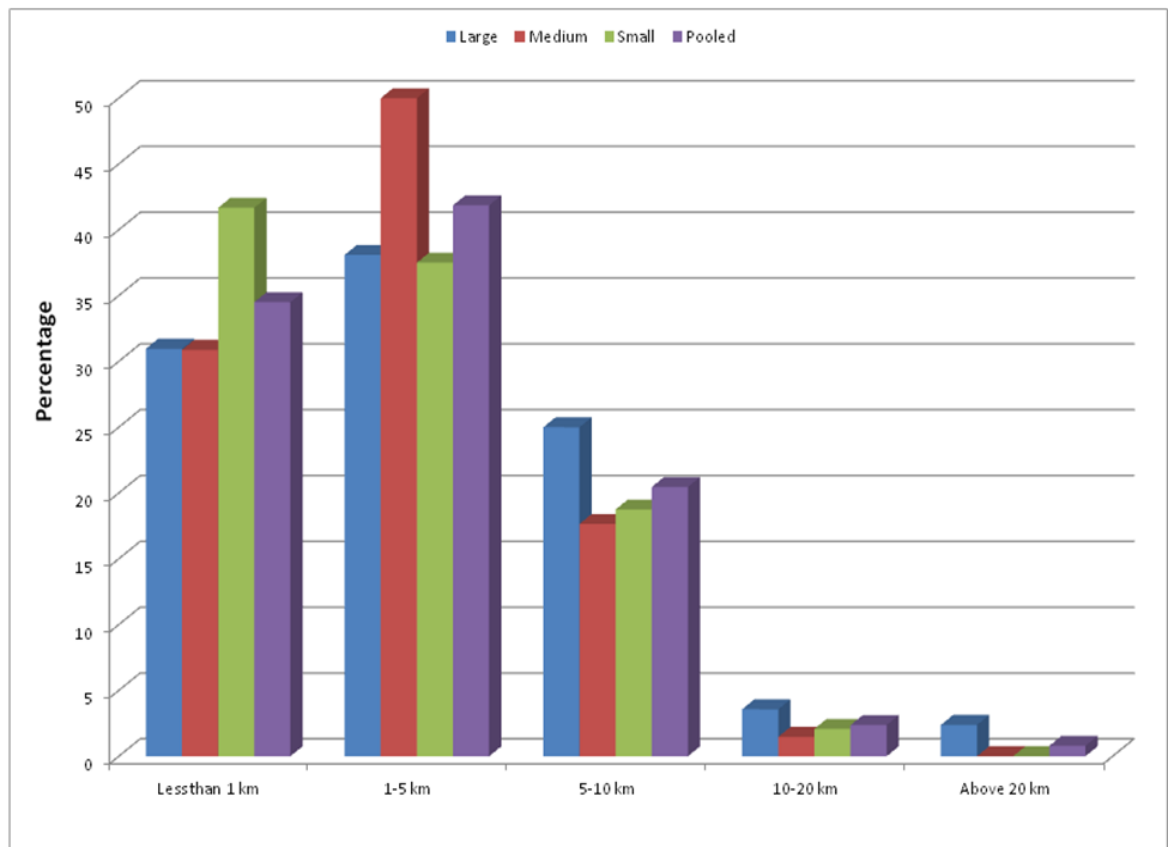


Fig. 10 Distribution of the poultry farmers on the basis of proximity to market

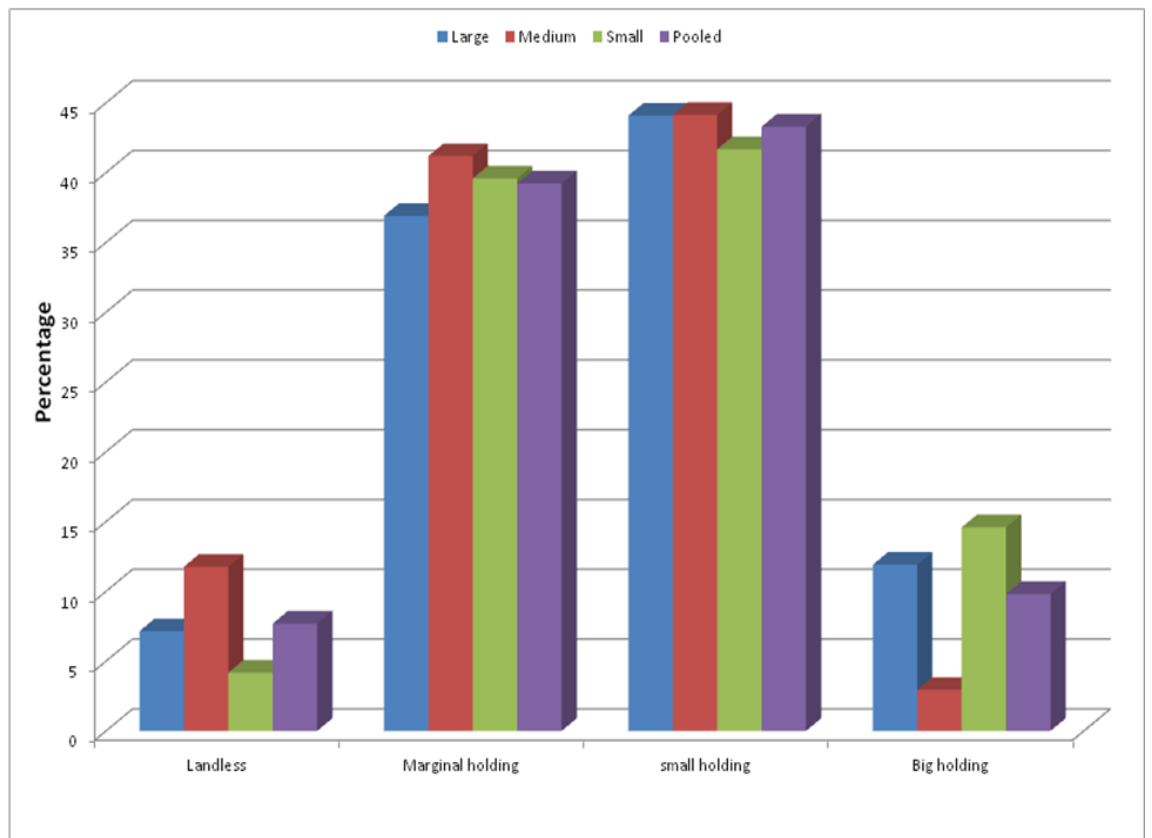


Fig. 11 Distribution of the poultry farmers on the basis of size of land holding

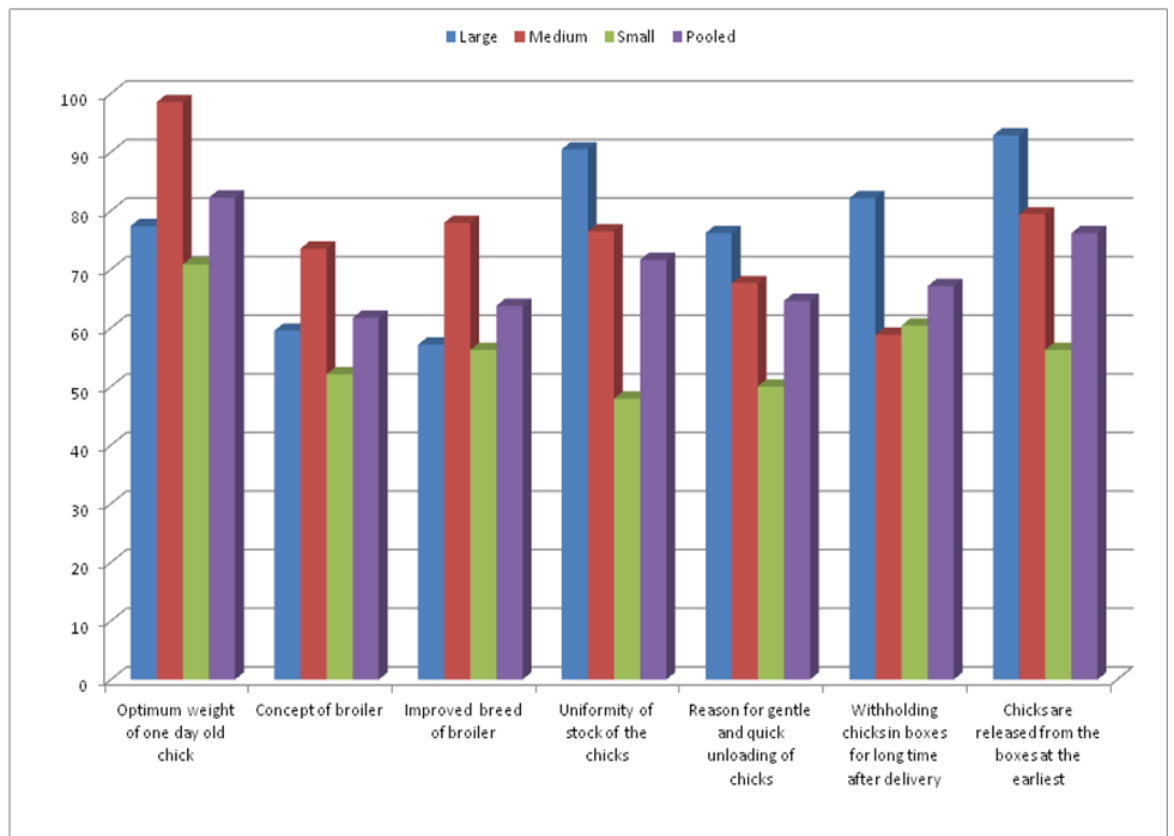


Fig. 13 Knowledge level of poultry farmers about the recommended chick procurement practices of poultry farming

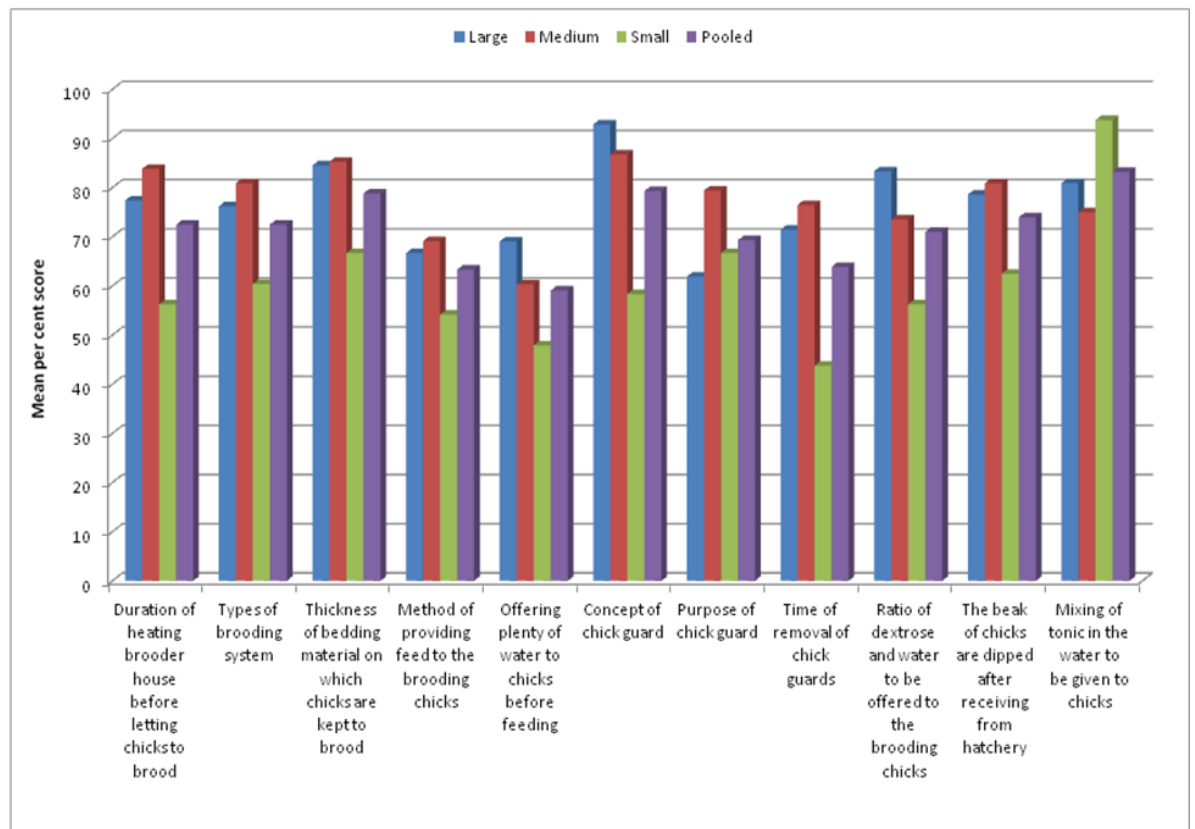


Fig. 14 Knowledge level of poultry farmers about the recommended brooding practices of poultry farming

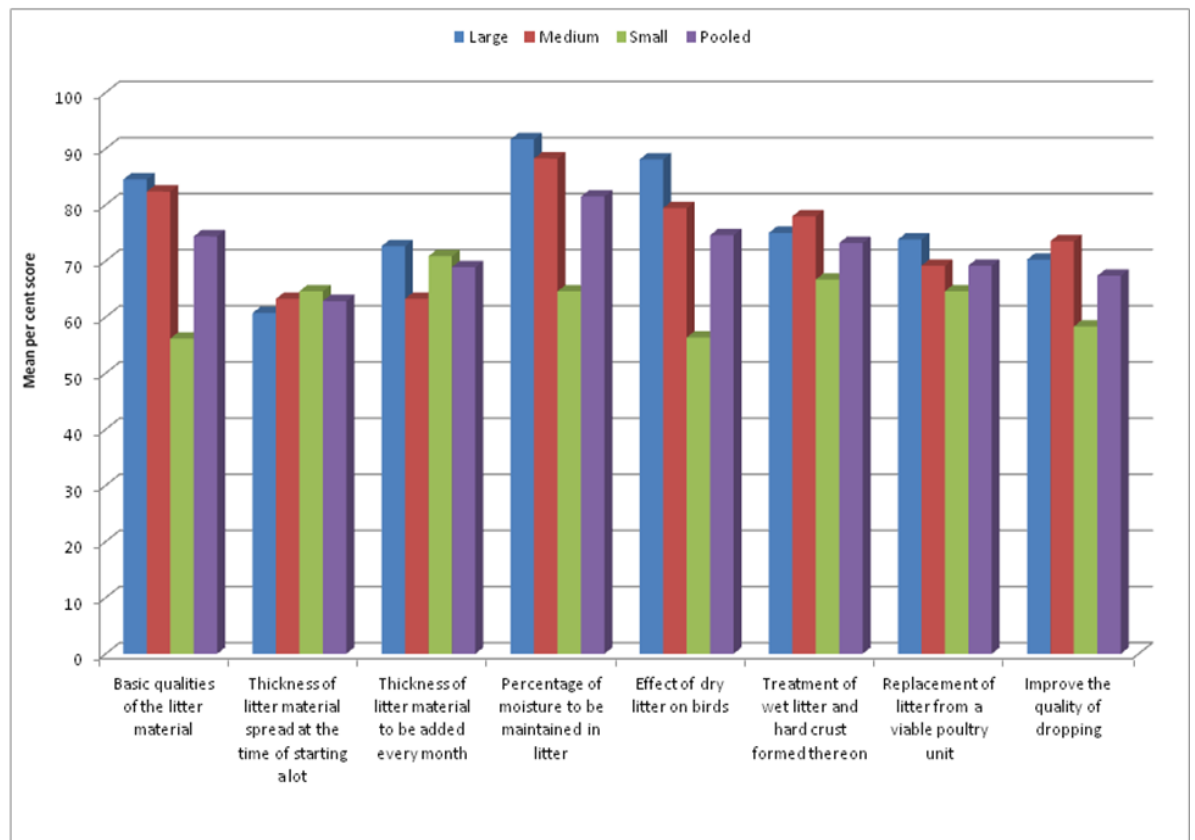


Fig. 15 Knowledge level of poultry farmers about the recommended litter management practices of poultry farming

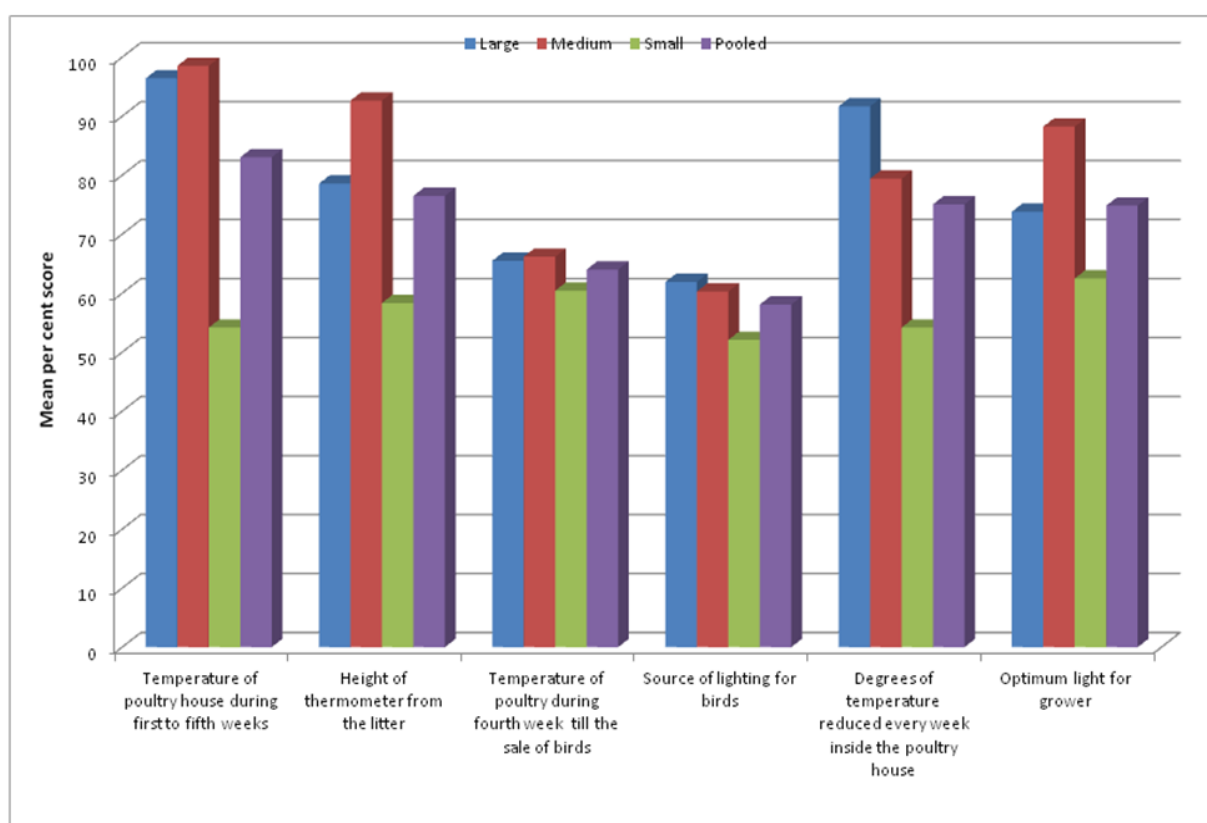


Fig. 16 Knowledge level of poultry farmers about the recommended temperature and light regulation practices of poultry farming

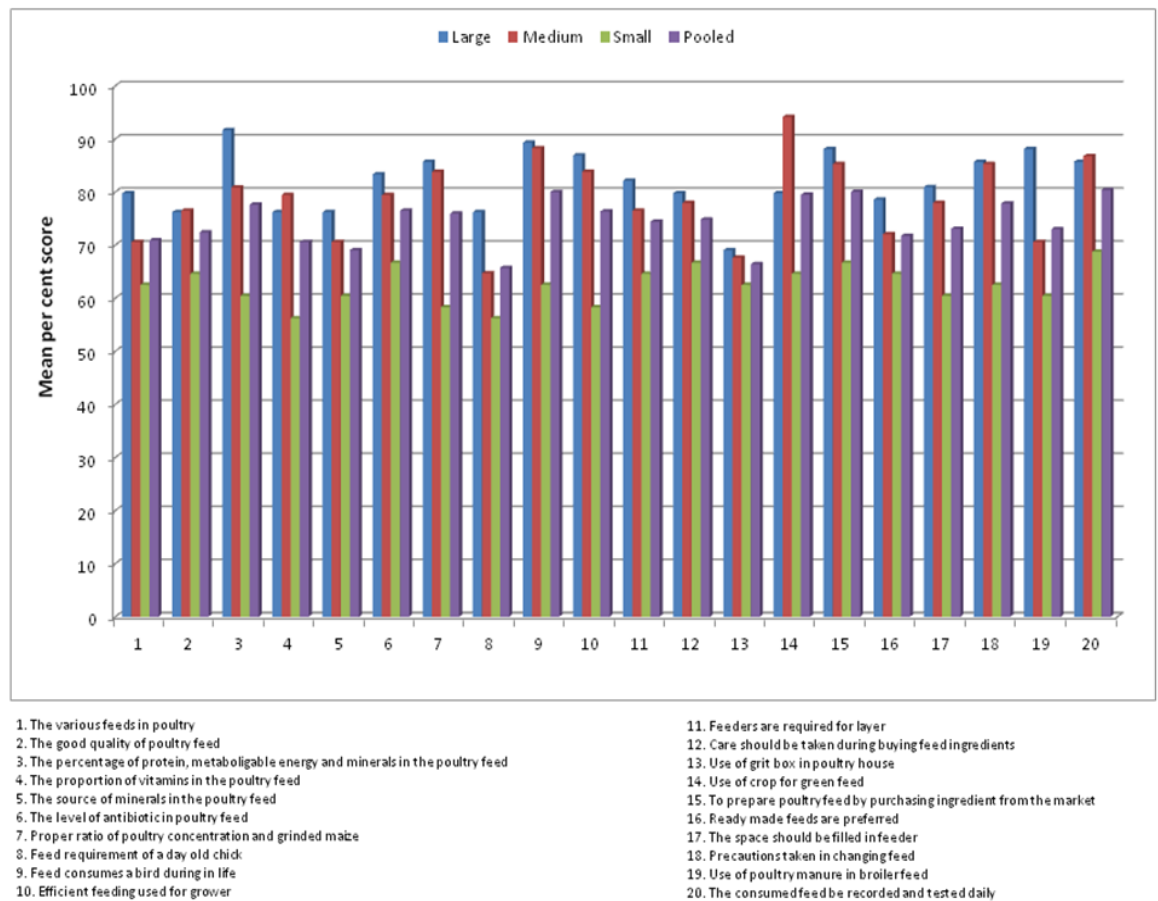


Fig. 17 Knowledge level of poultry farmers about the recommended feeding practices of poultry farming

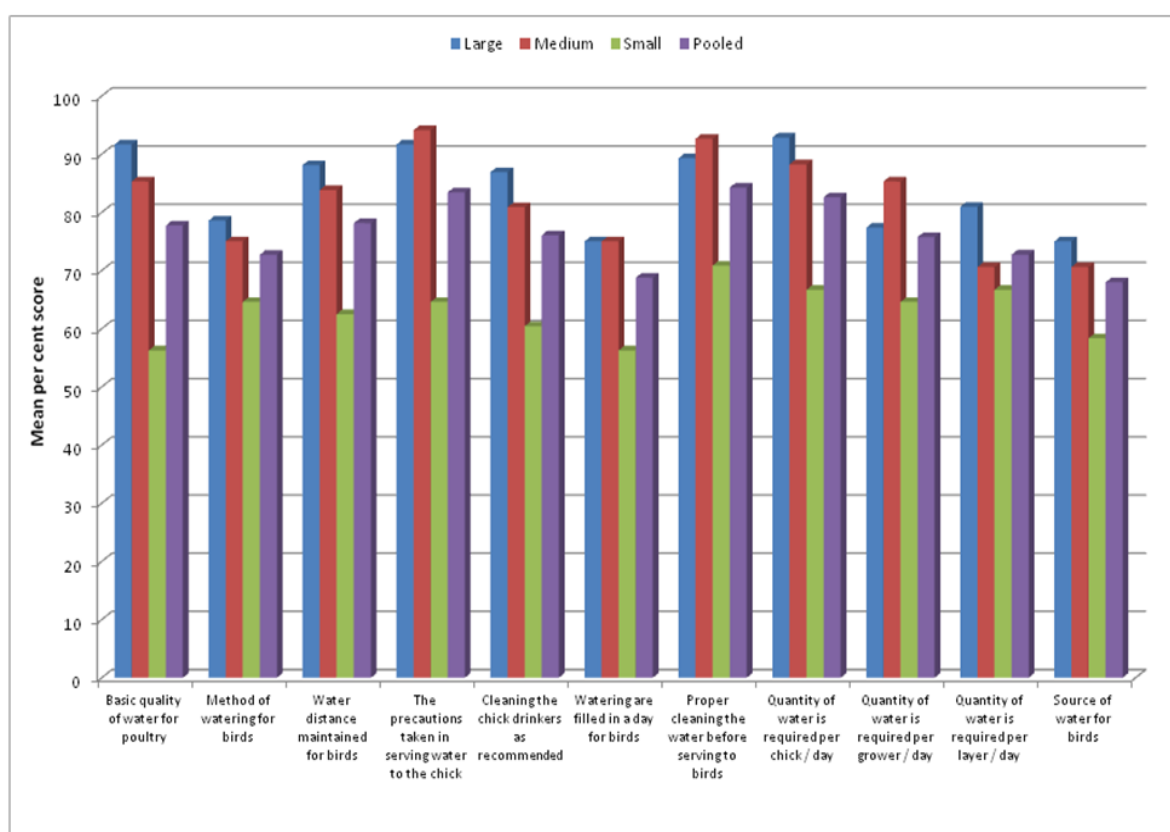


Fig. 18 Knowledge level of poultry farmers about the recommended watering practices of poultry farming

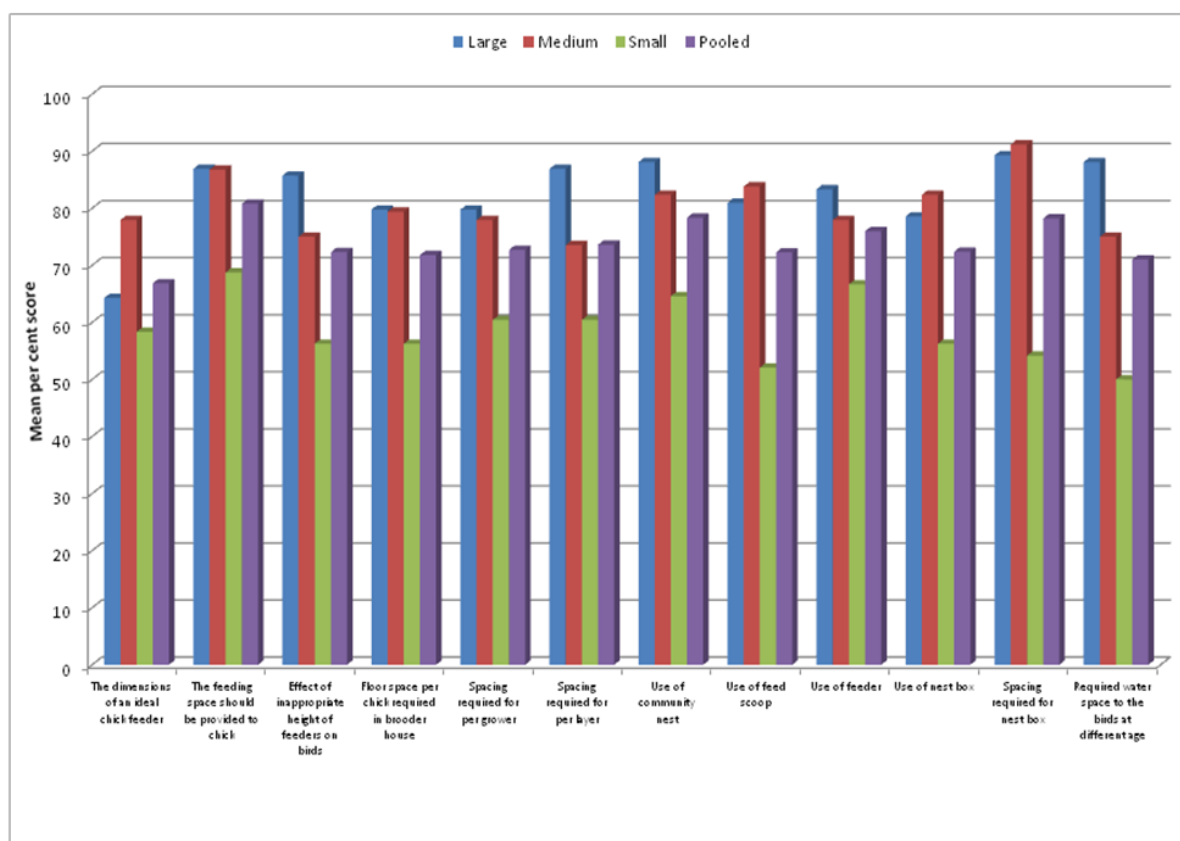


Fig. 19 Knowledge level of poultry farmers about the recommended equipments and spacing practices of poultry farming

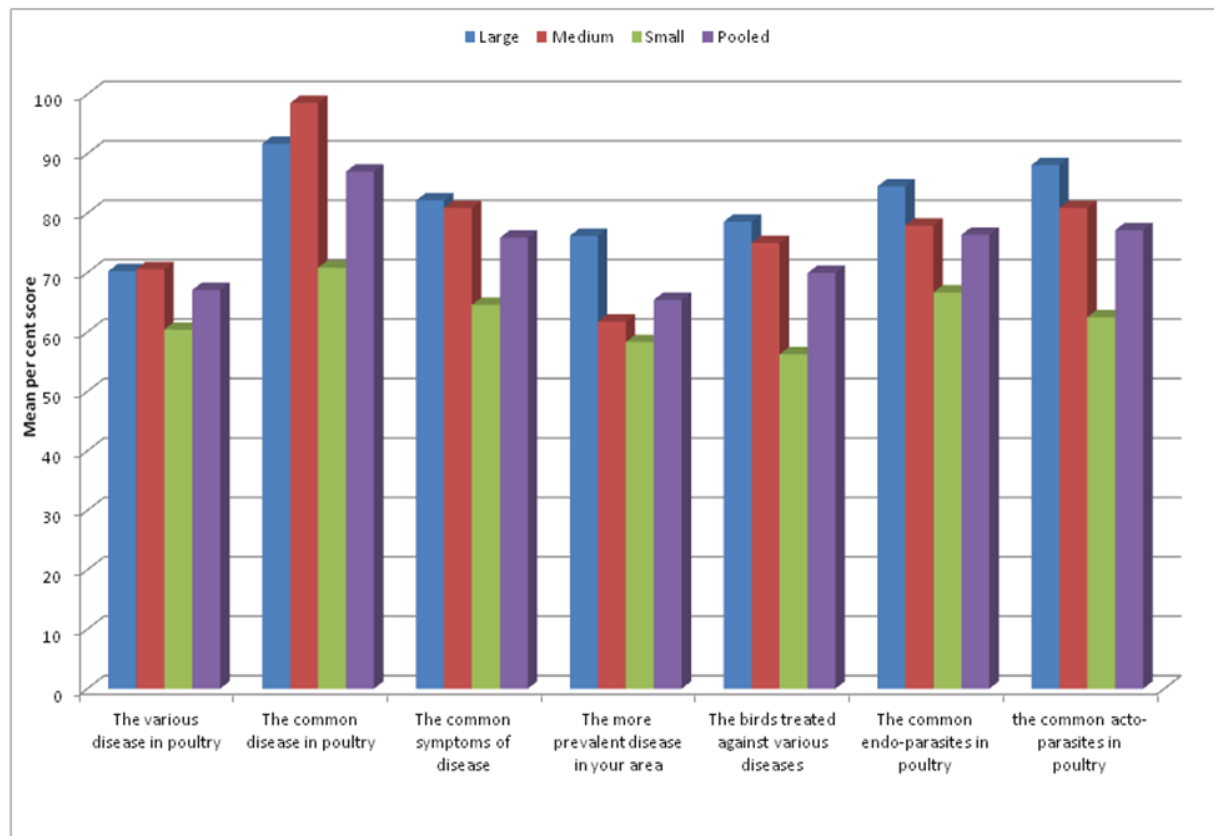


Fig. 20 Knowledge level of poultry farmers about the common diseases and parasites of poultry farming

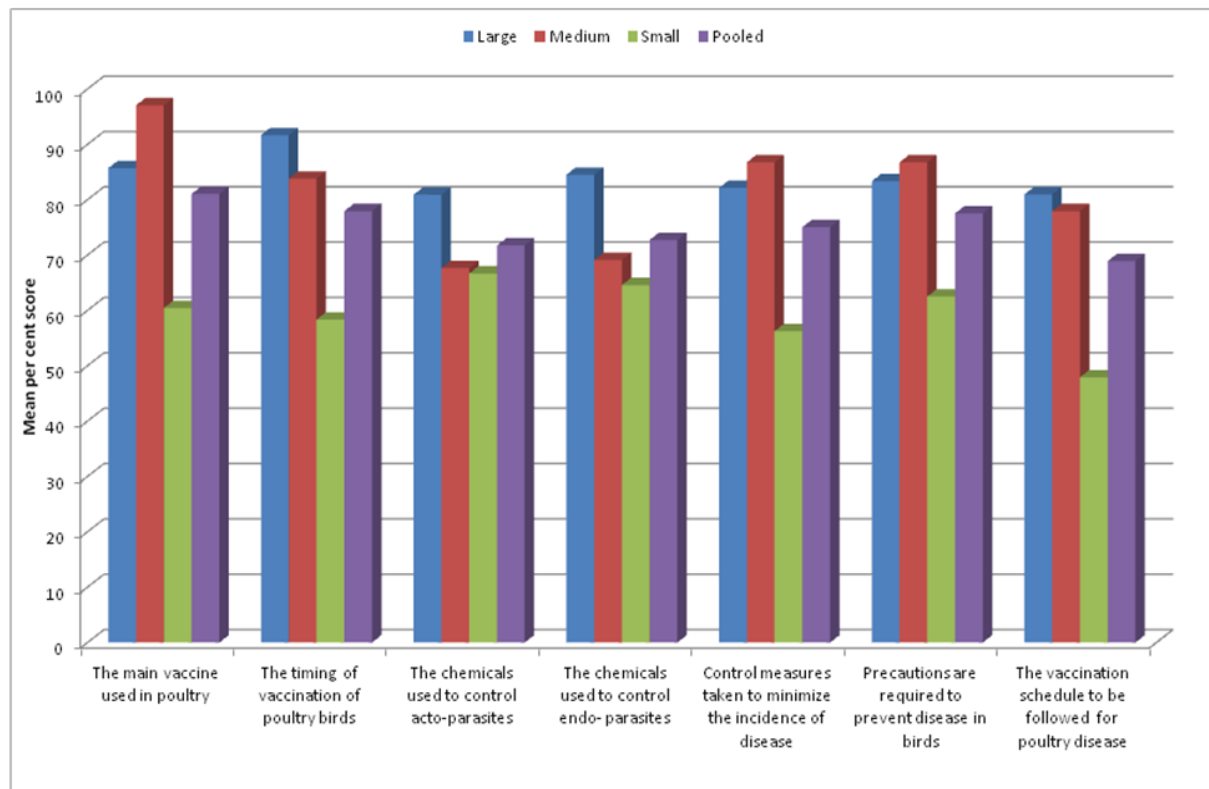


Fig. 21 Knowledge level of poultry farmers about the recommended vaccination and management practices of poultry farming

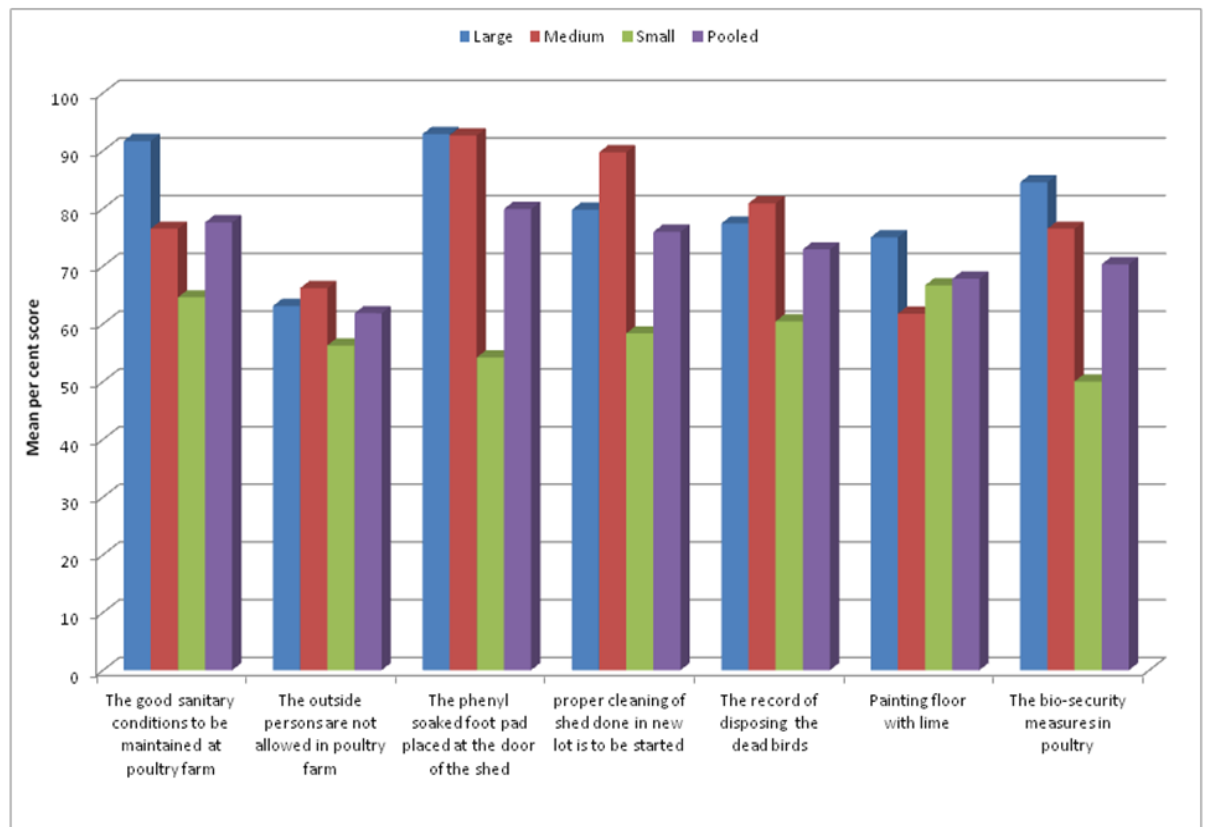


Fig. 22 Knowledge level of poultry farmers about the recommended sanitation practices of poultry farming

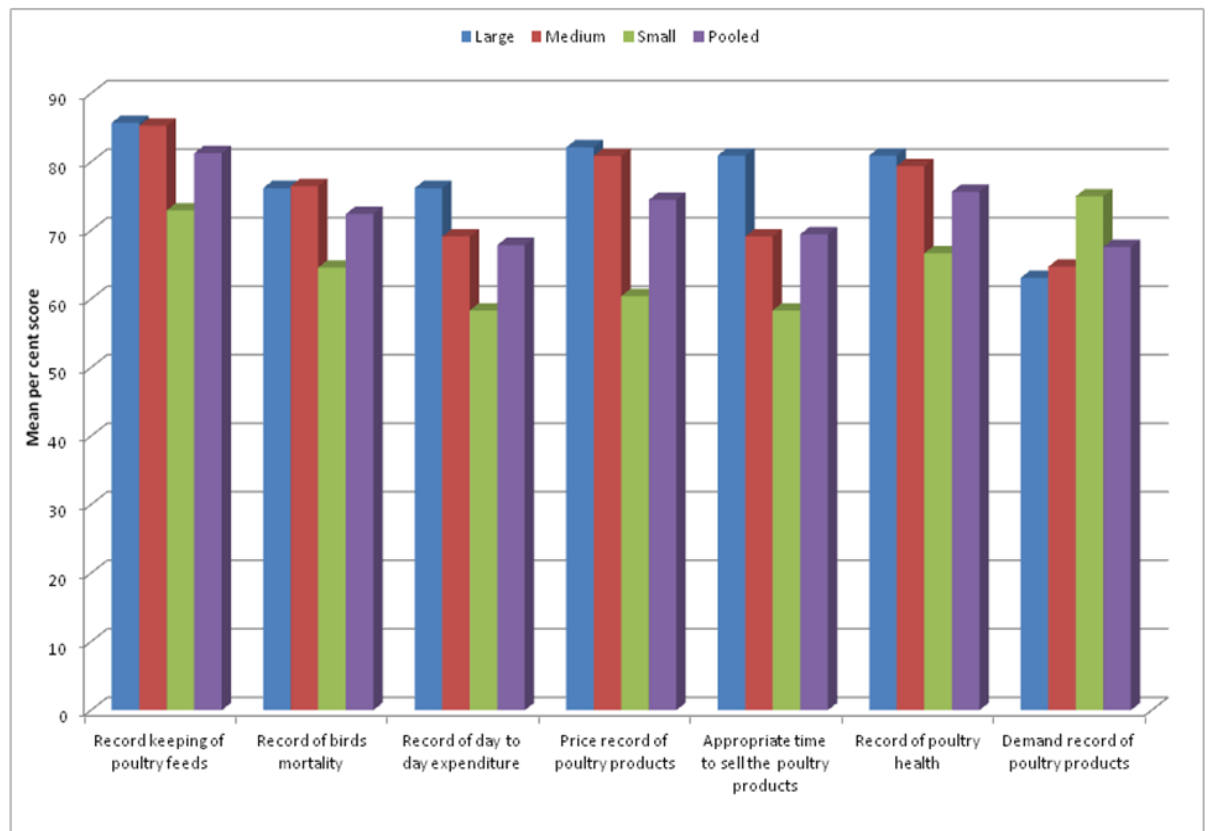


Fig. 23 Knowledge level of poultry farmers about the recommended record keeping and marketing practices of poultry farming

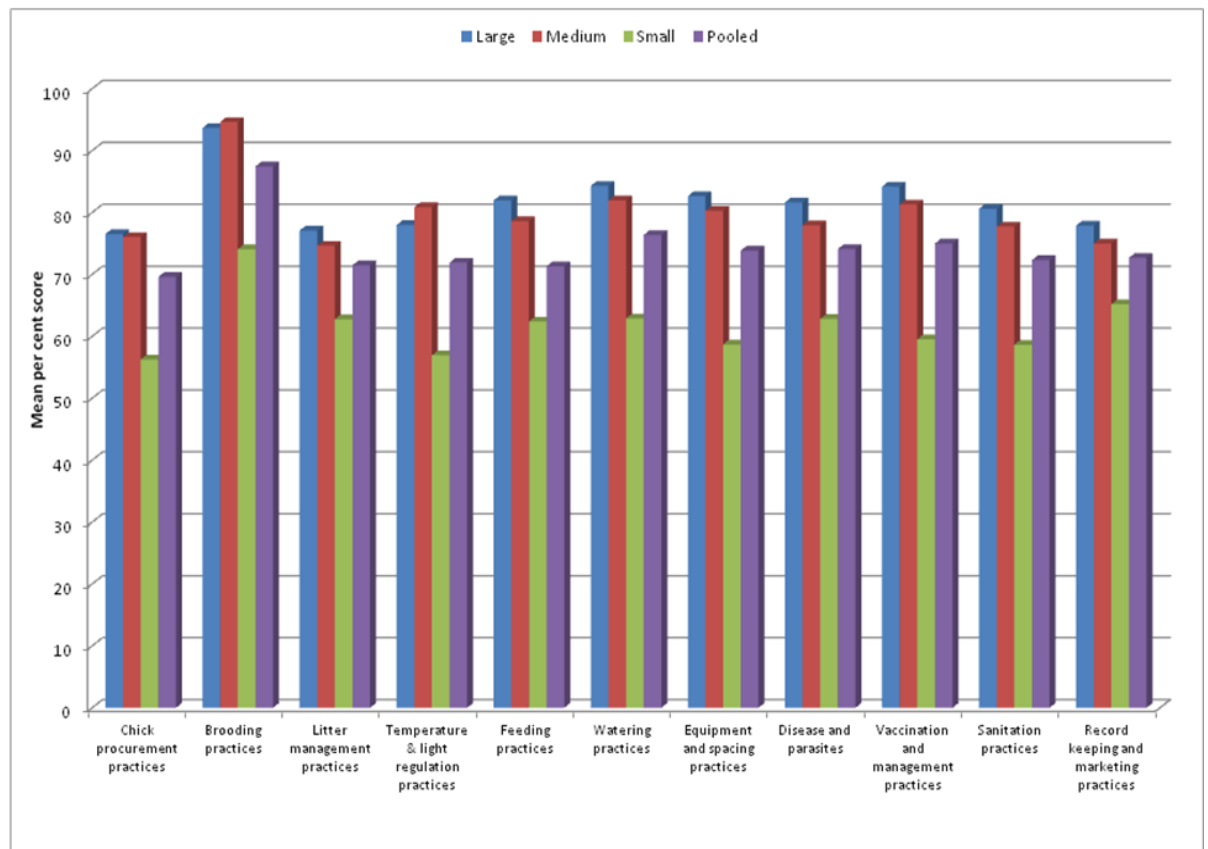


Fig. 24 Practice wise overall knowledge level of the poultry farmers about recommended poultry farming practices

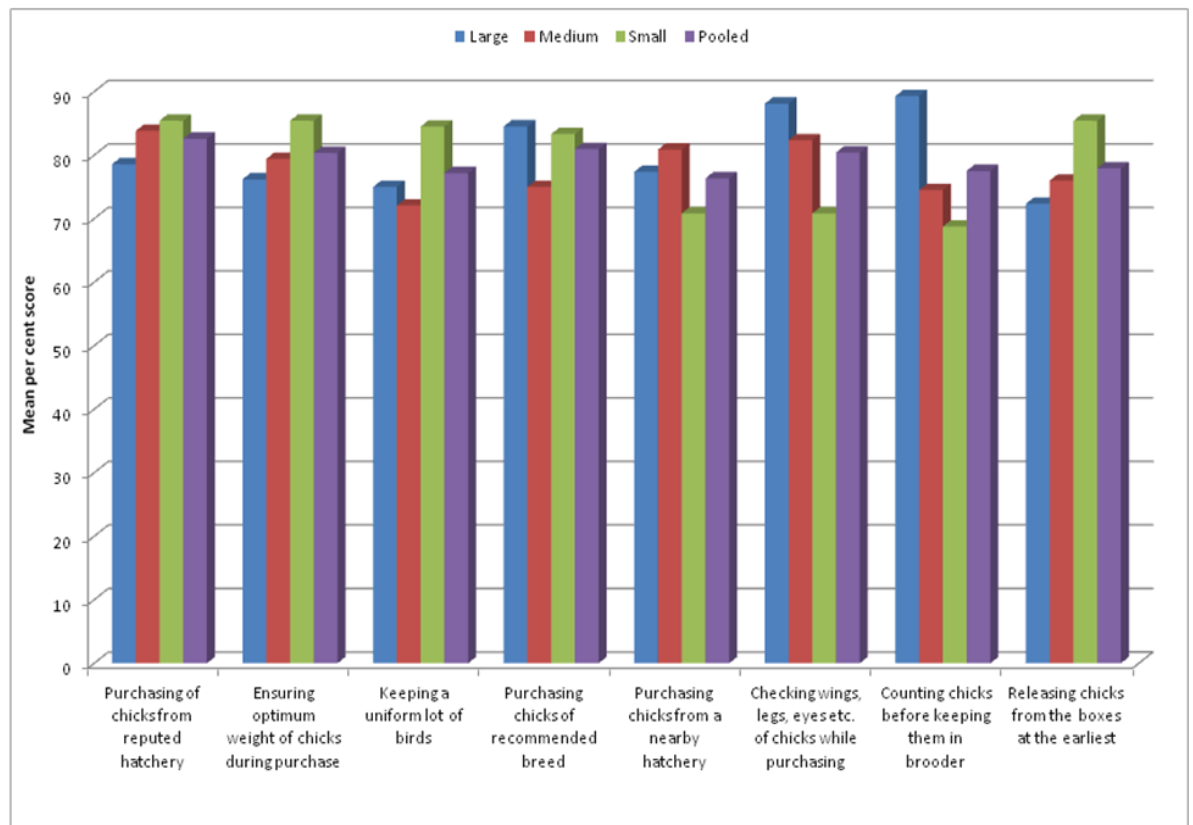


Fig. 26 Adoption of recommended chick procurement practices by the poultry farmers

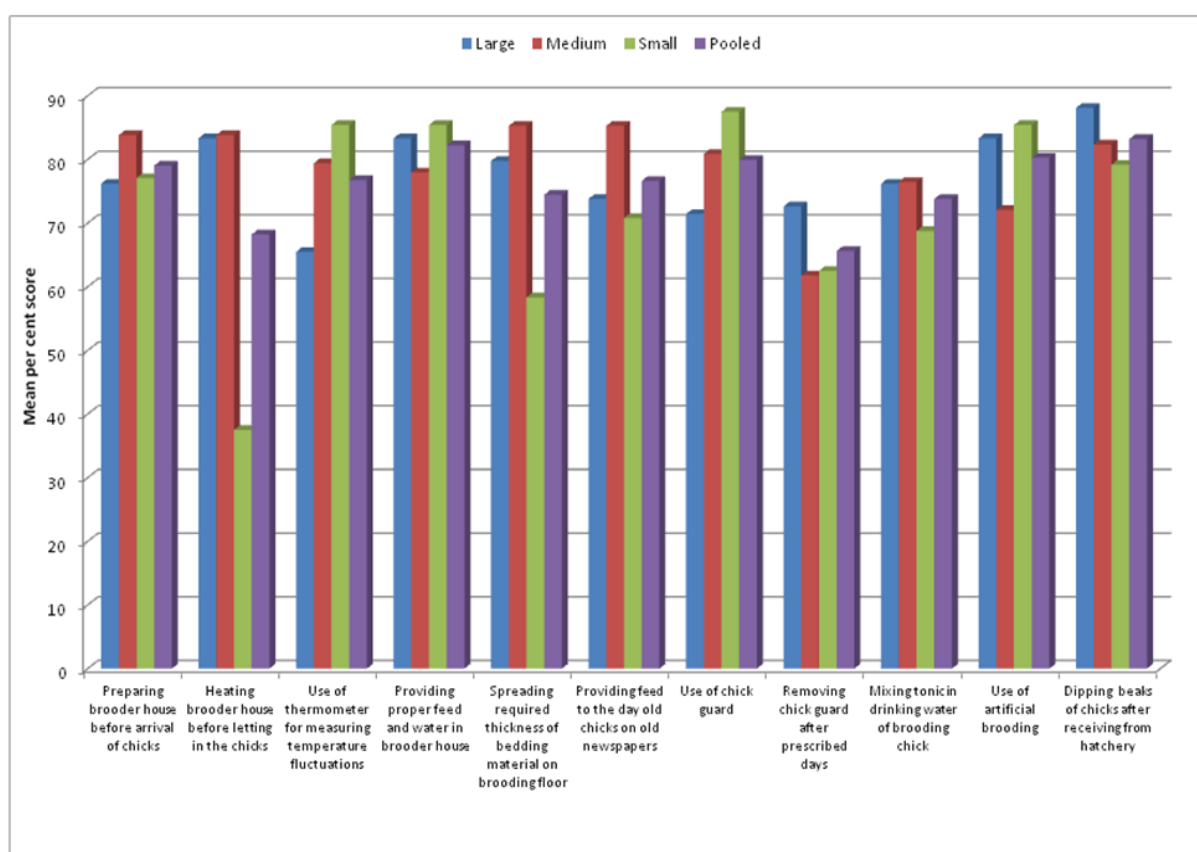


Fig. 27 Adoption of recommended brooding practices by the poultry farmers

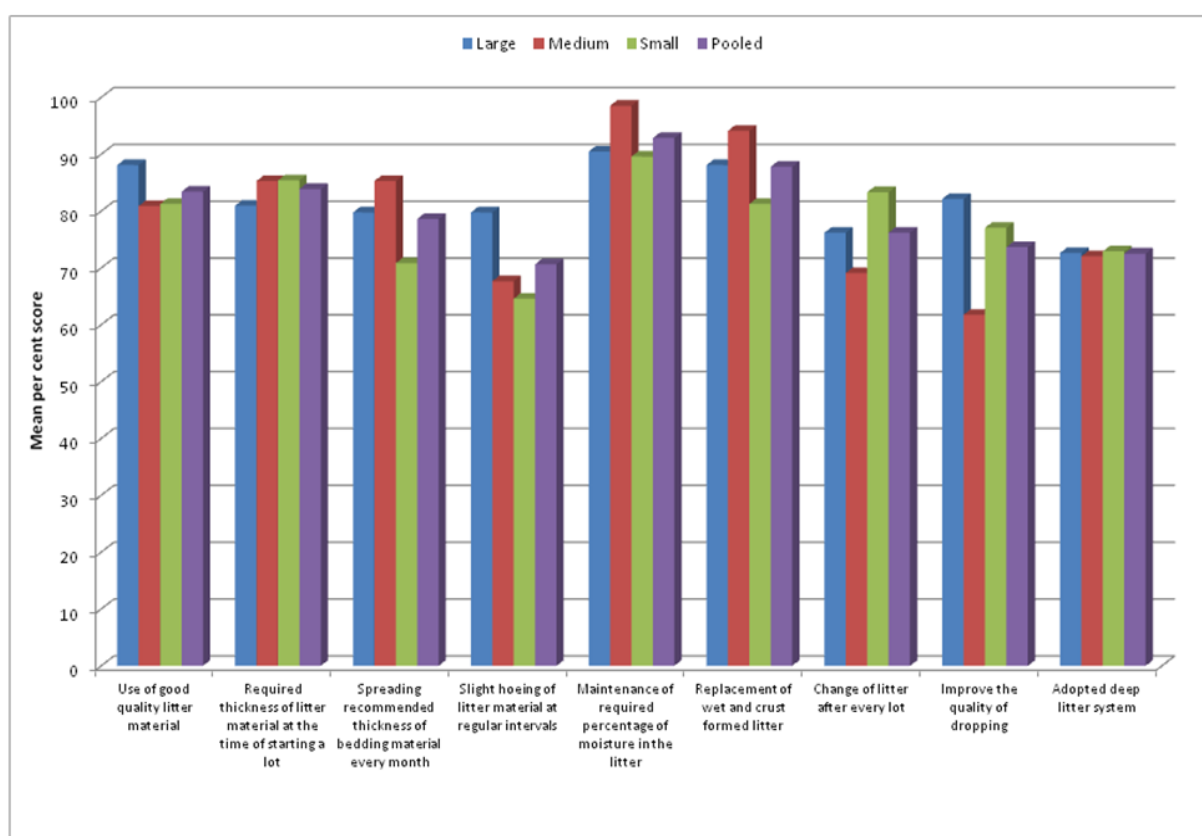


Fig. 28 Adoption of recommended litter management practices by the poultry farmers

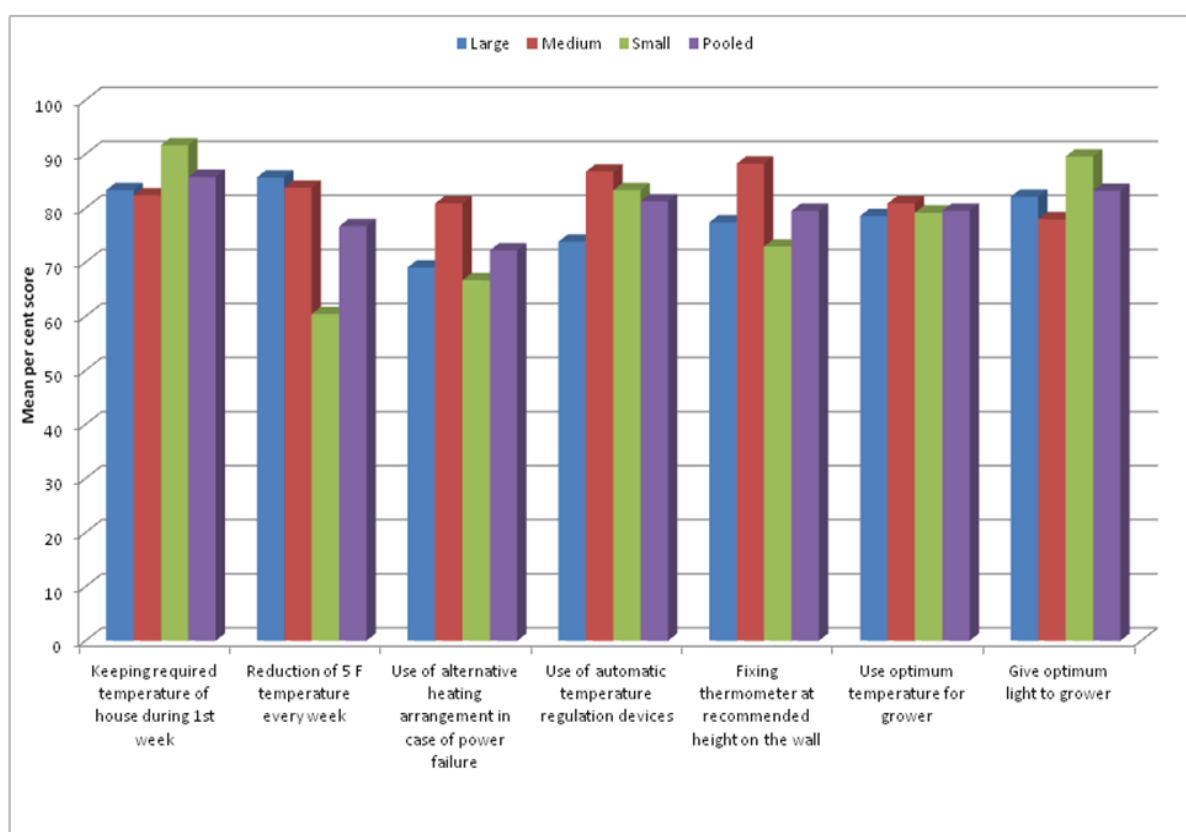


Fig. 29 Adoption of recommended temperature and light regulation practices by the poultry farmers

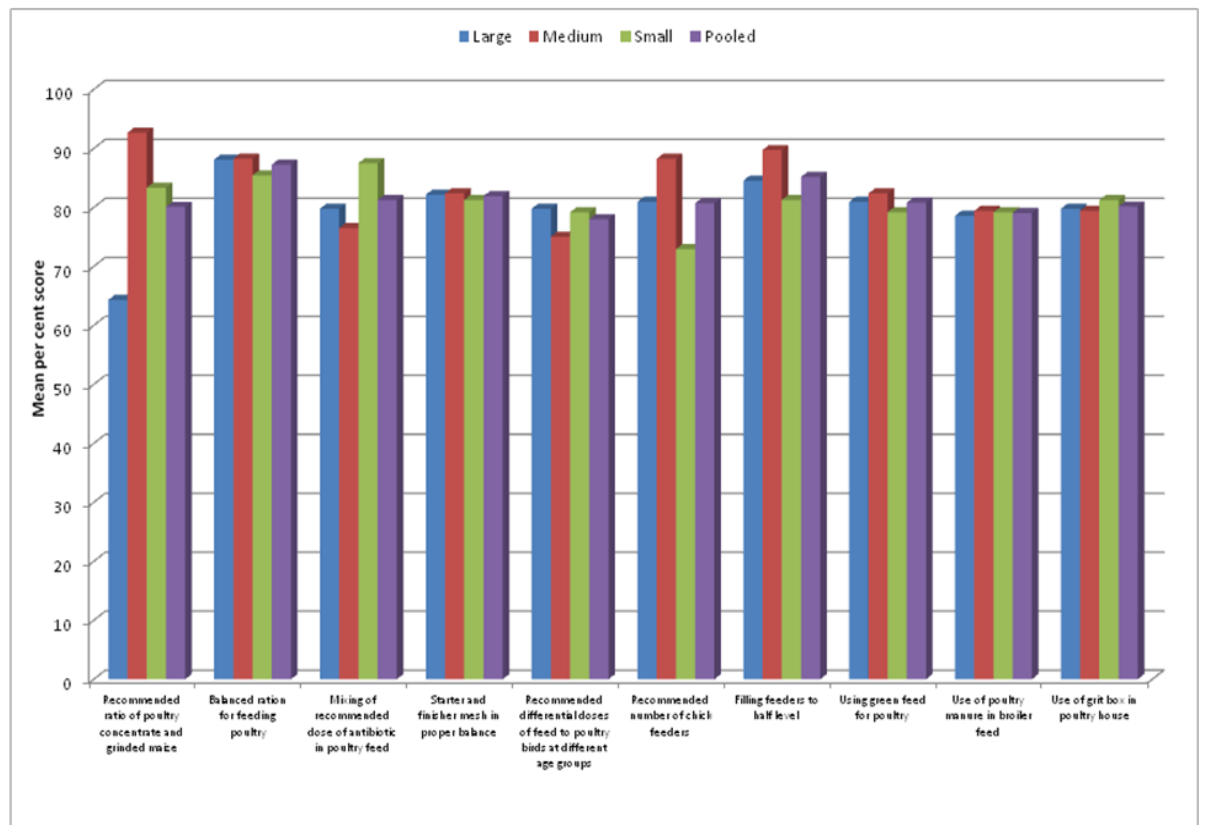


Fig. 30 Adoption of recommended feeding practices by the poultry farmers

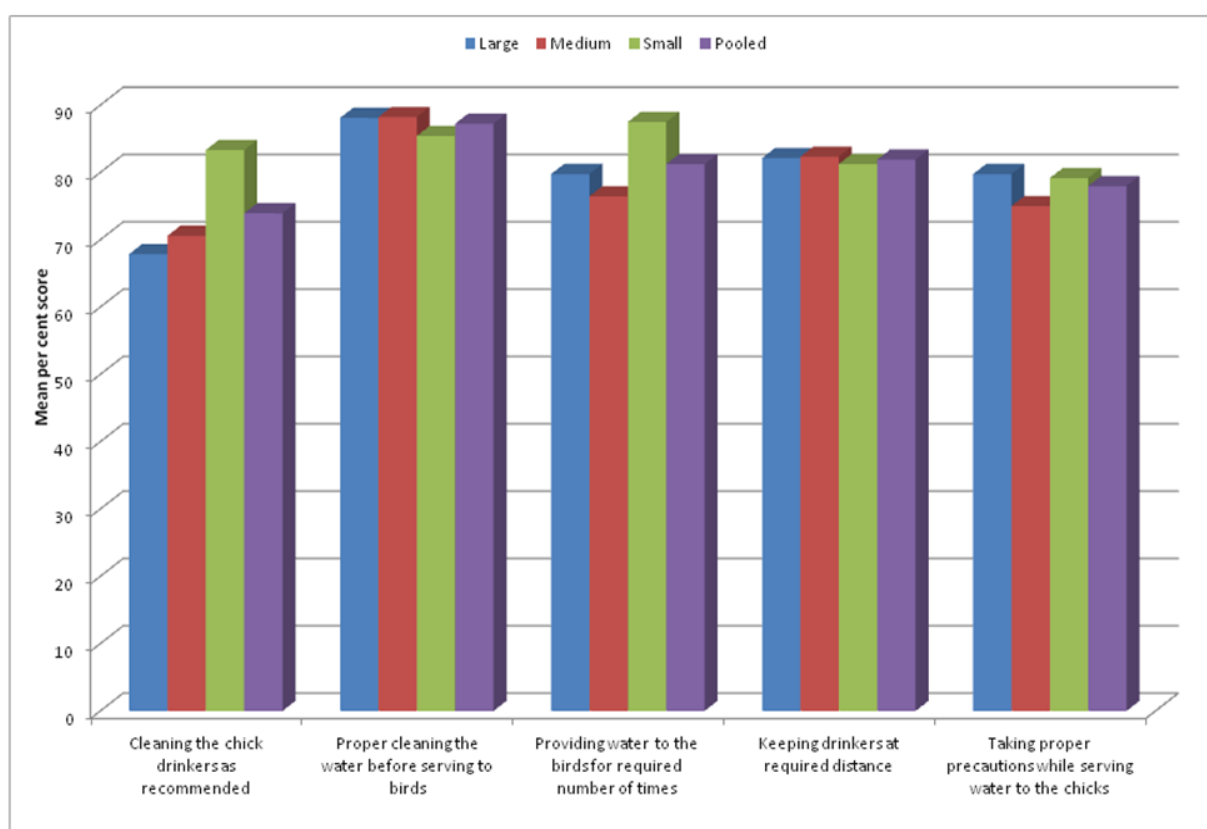


Fig. 31 Adoption of recommended watering practices by the poultry farmers

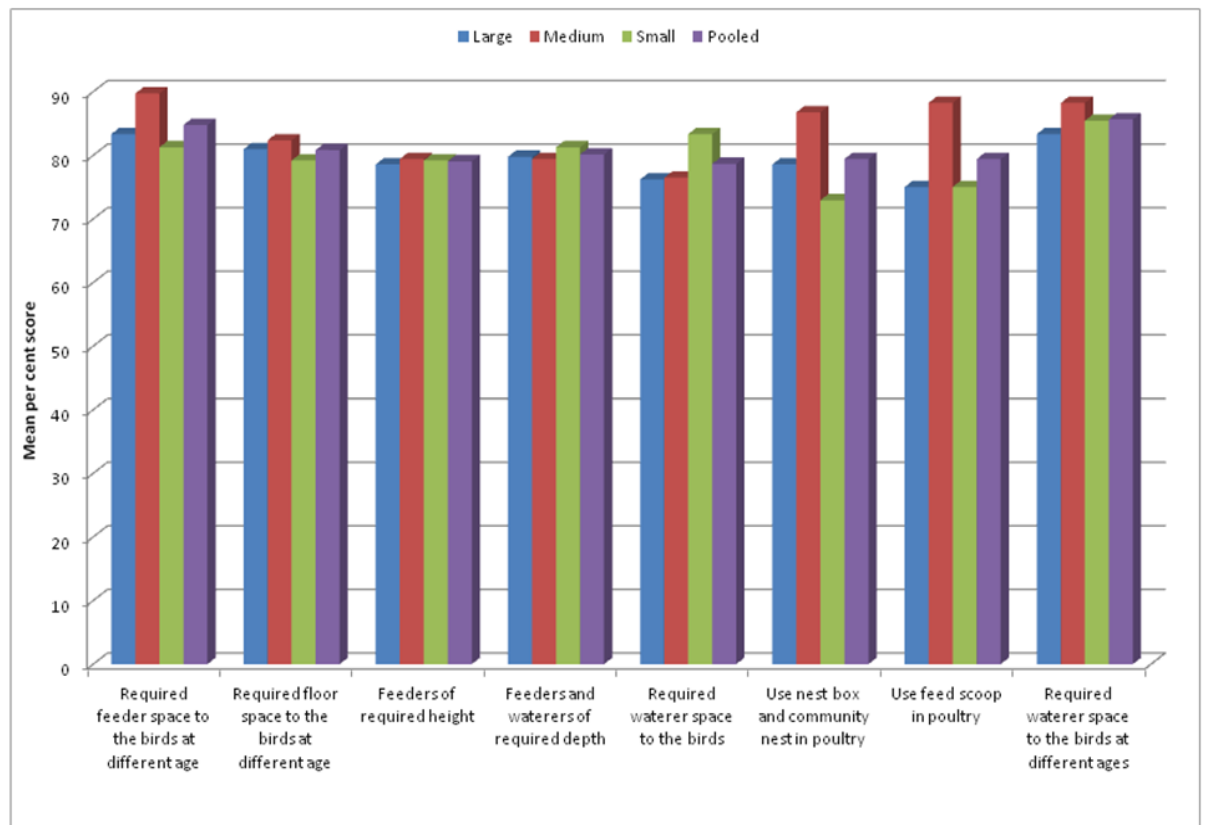


Fig. 32 Adoption of recommended equipment and spacing practices by the poultry farmers

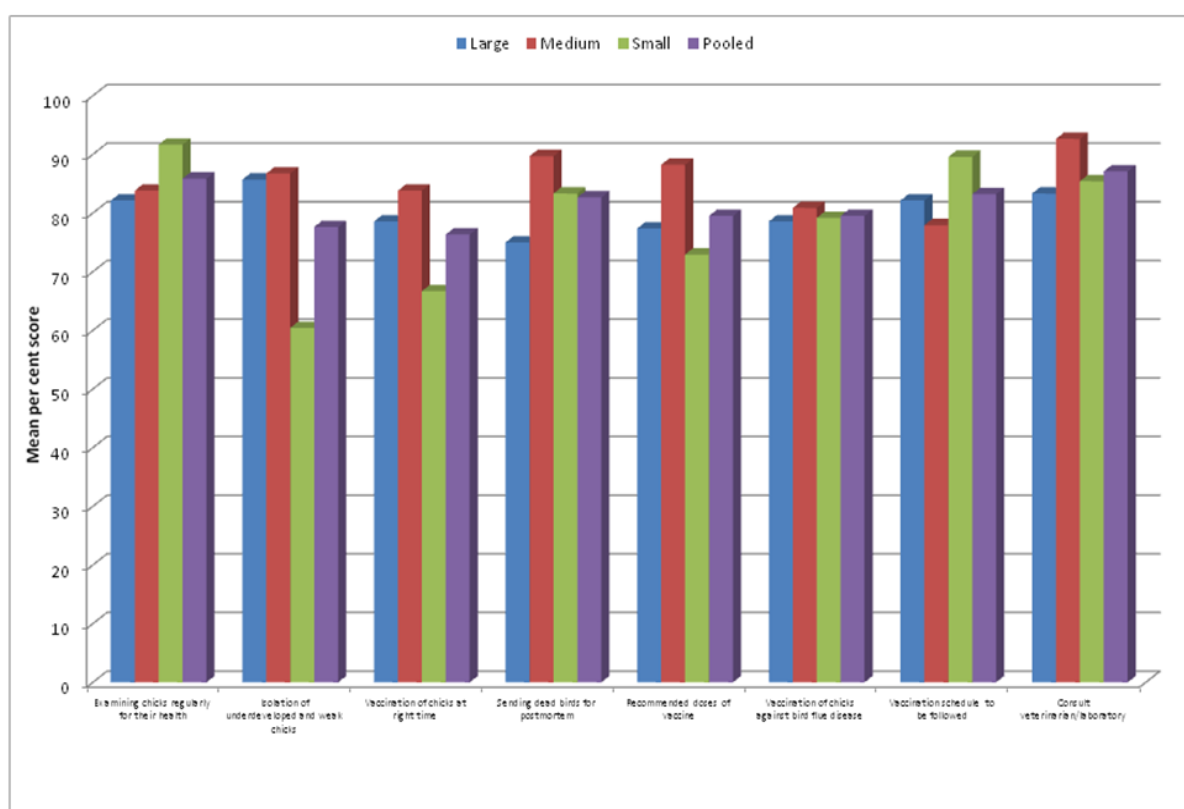


Fig. 33 Adoption of common disease management by the poultry farmers

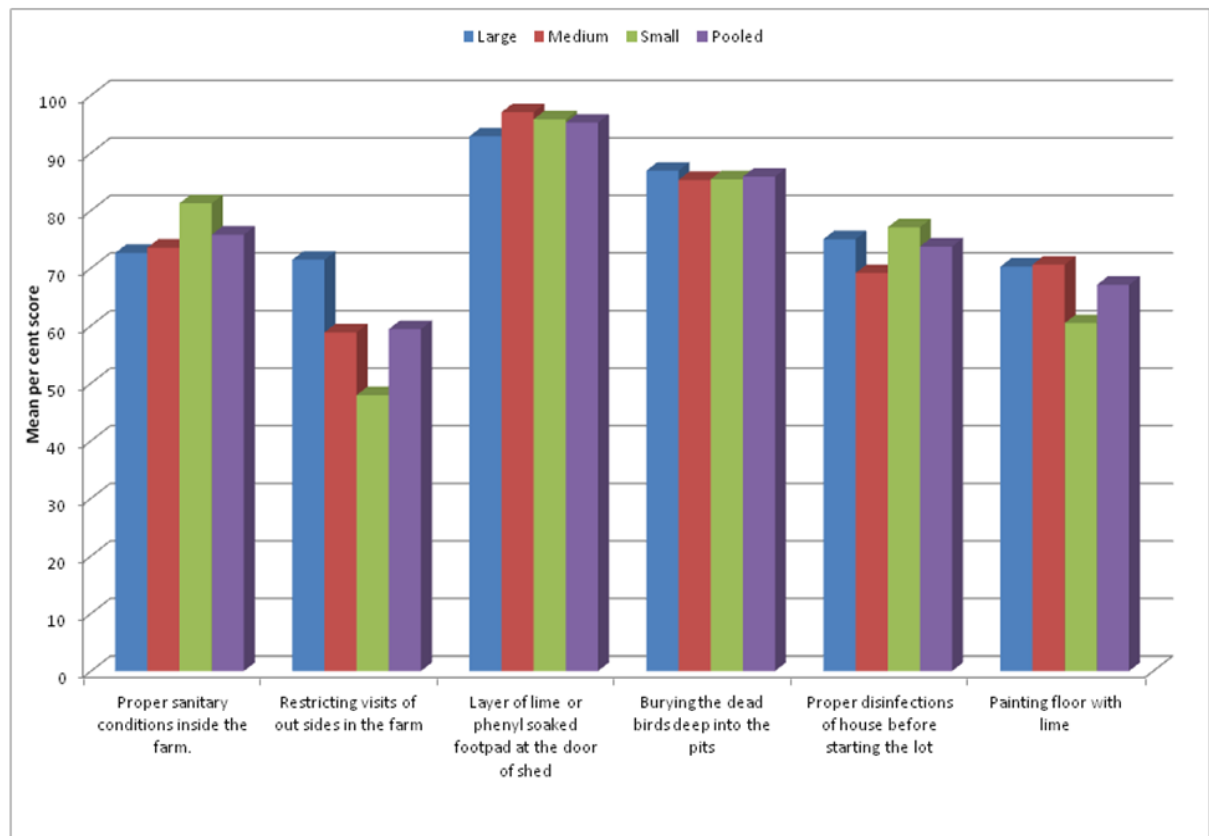


Fig. 34 Adoption of recommended sanitation practices by the poultry farmers

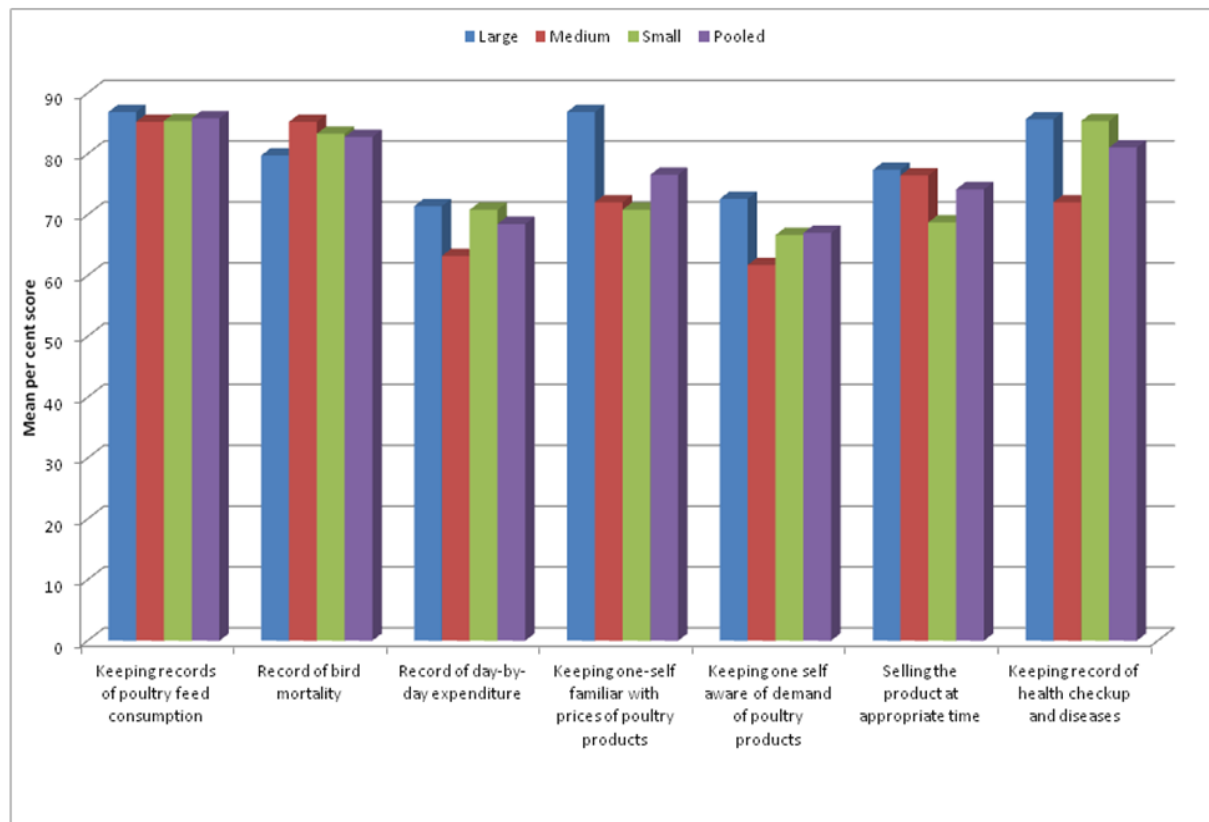


Fig. 35 Adoption of recommended record keeping and marketing practices by the poultry farmers

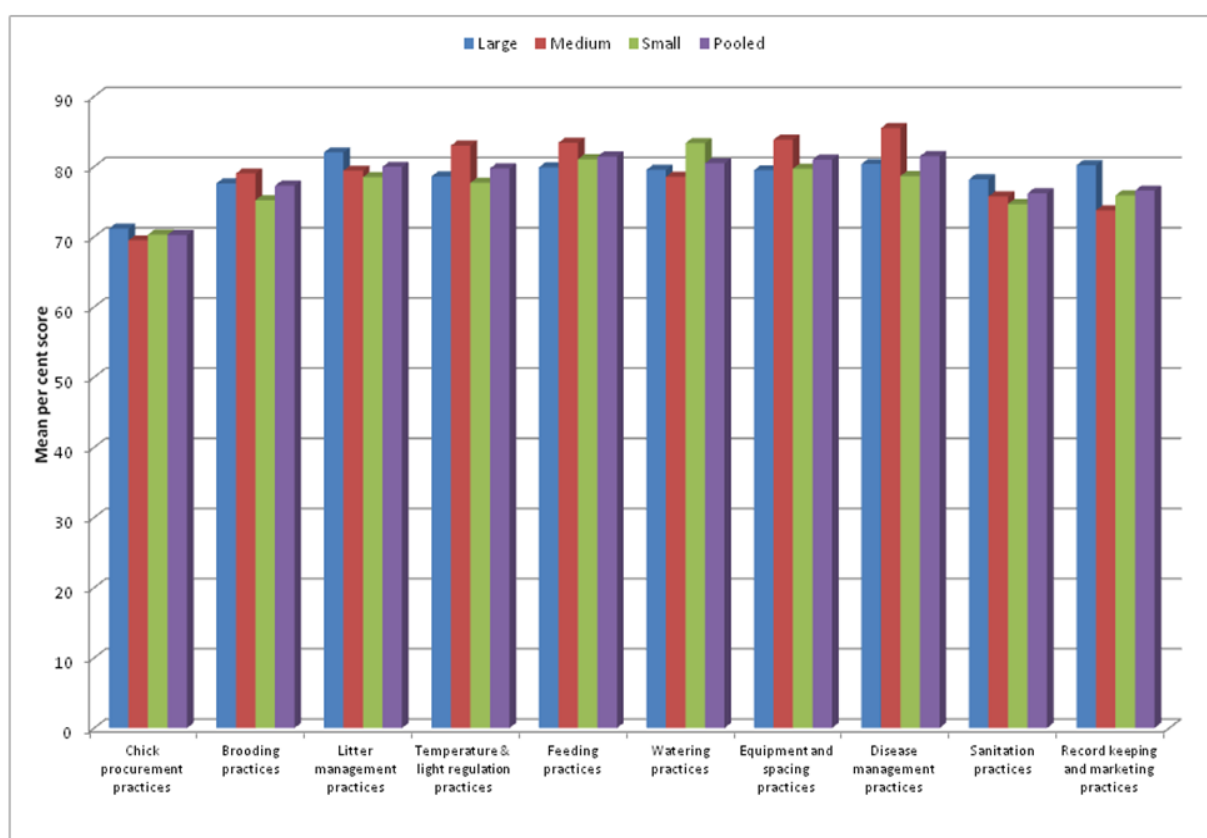


Fig. 36 Practice wise comparison of overall adoption of recommended poultry farming practices by the poultry farmers

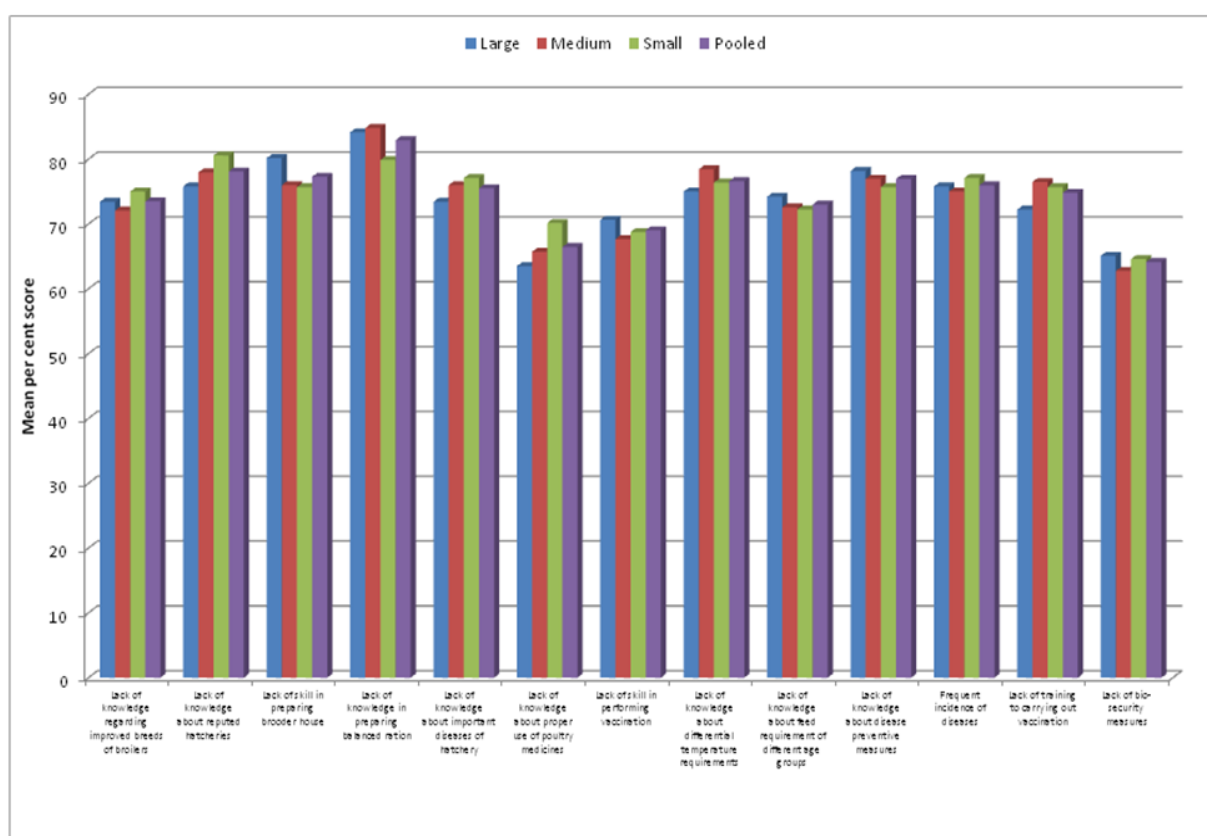


Fig. 39 Technological constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

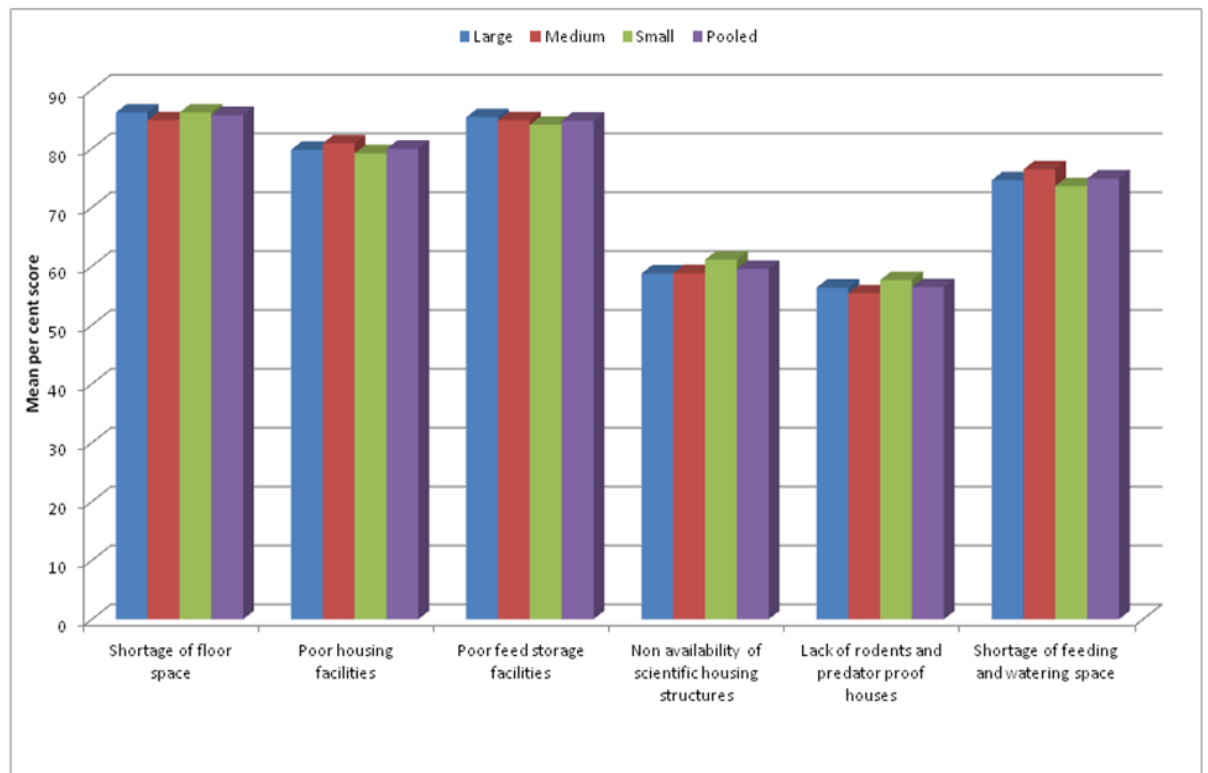


Fig. 40 Infrastructural constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

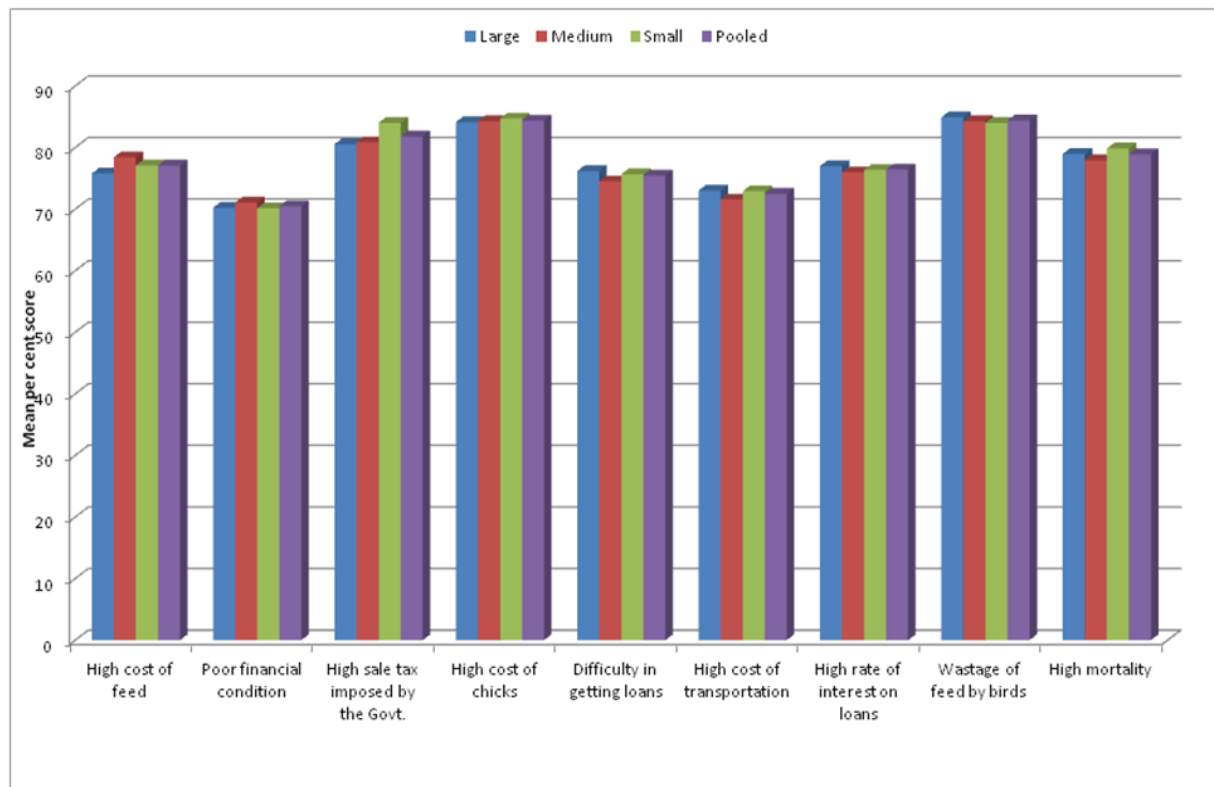


Fig. 41 Economic constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

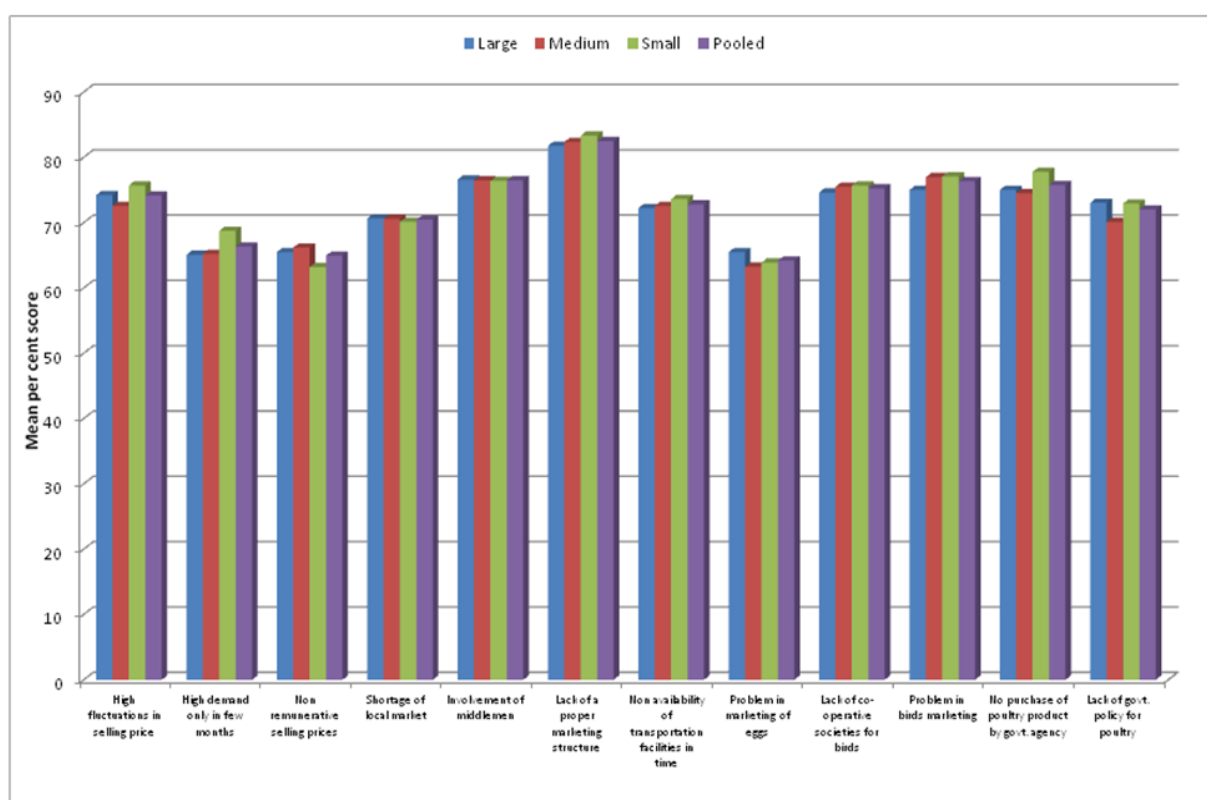


Fig. 42 Marketing constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

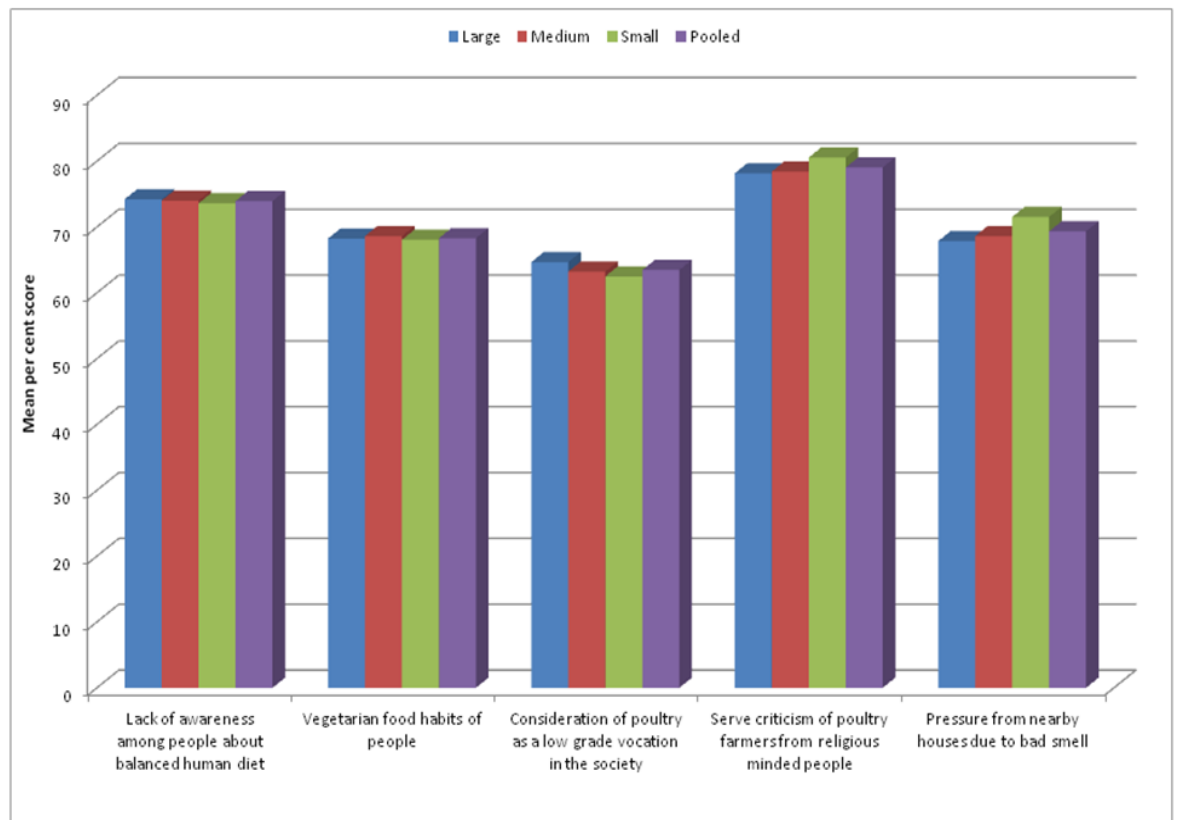


Fig. 43 Social constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

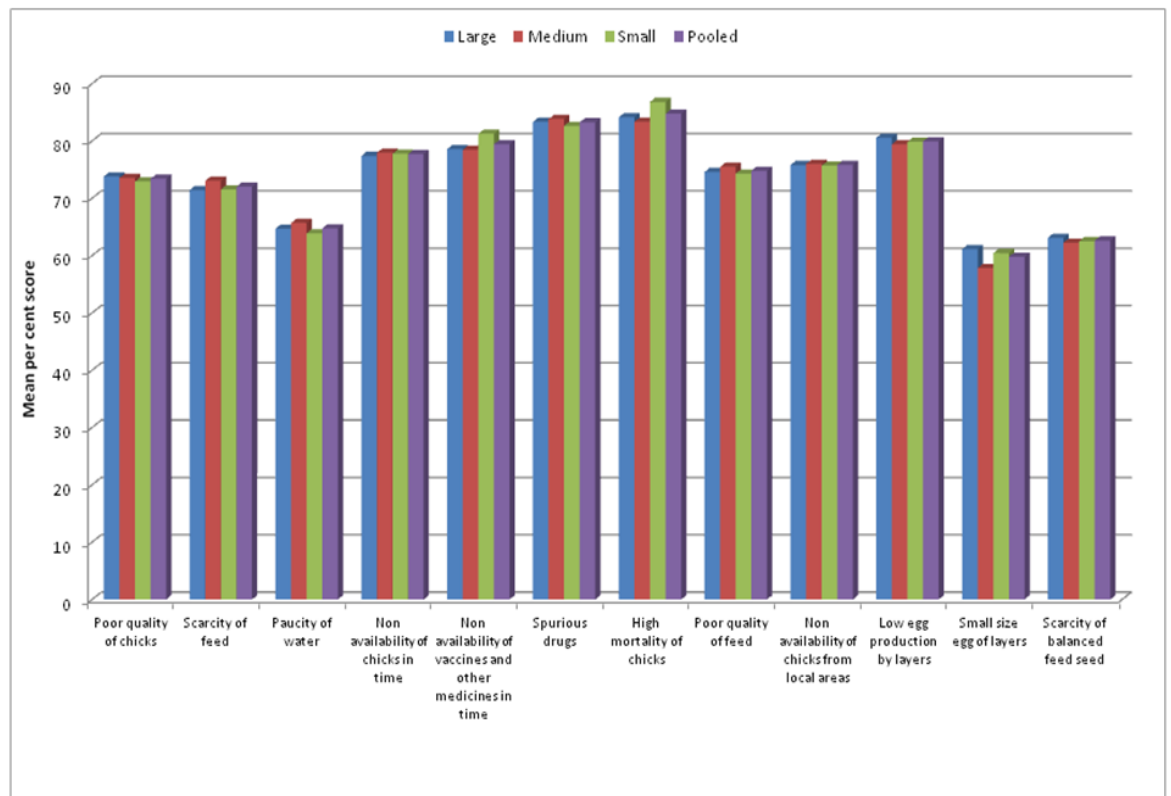


Fig. 44 Input related constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

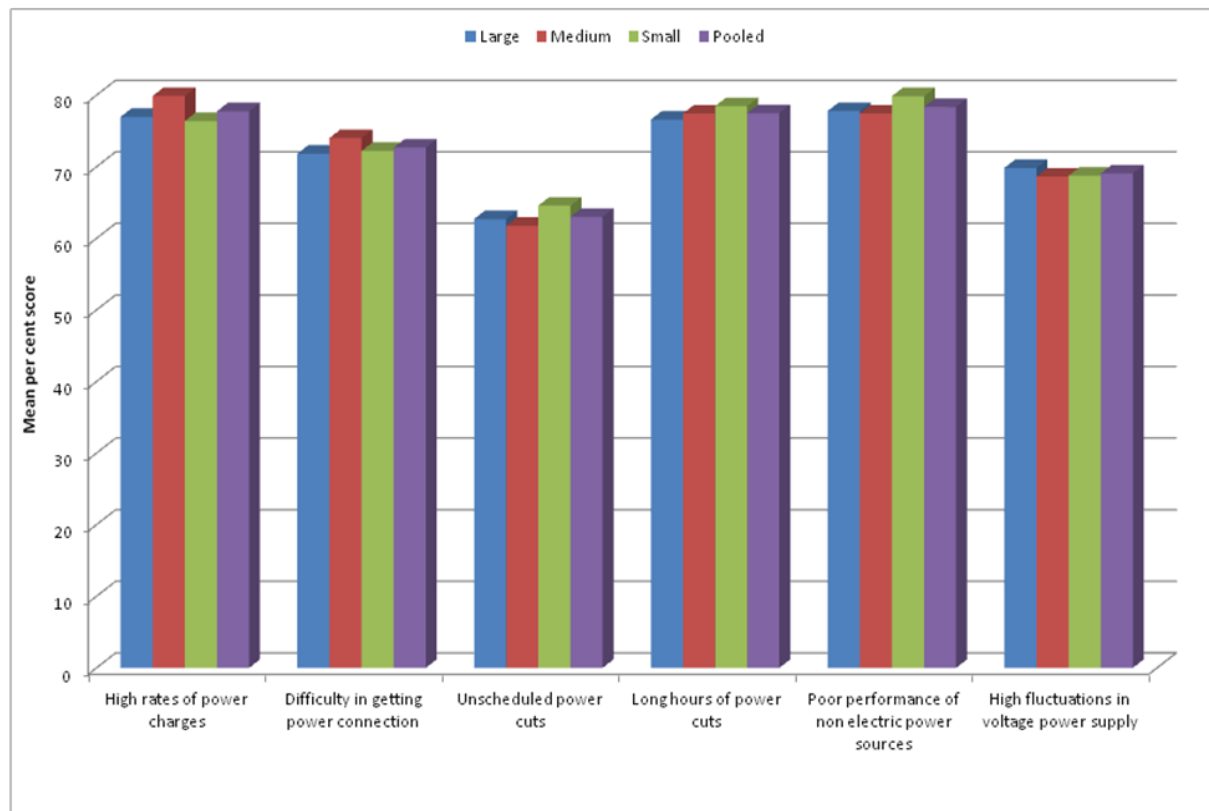


Fig. 45 Power supply related constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

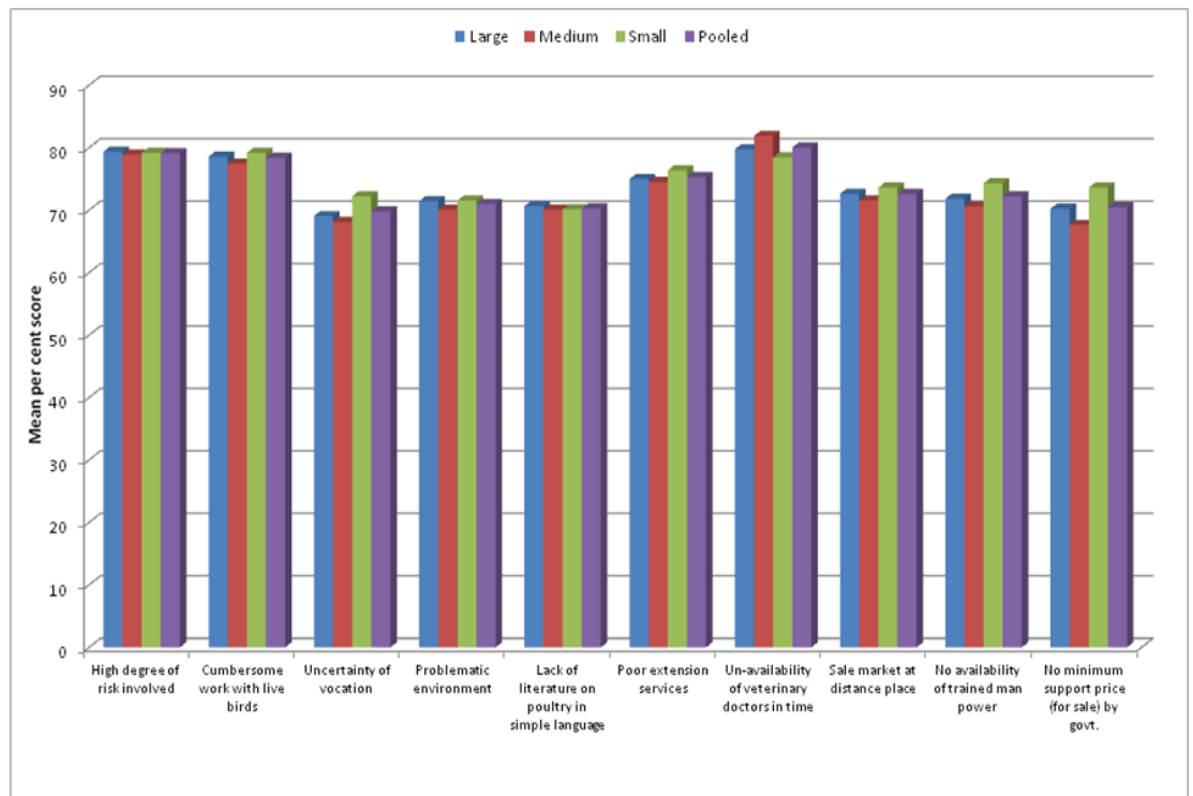


Fig. 46 Miscellaneous constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

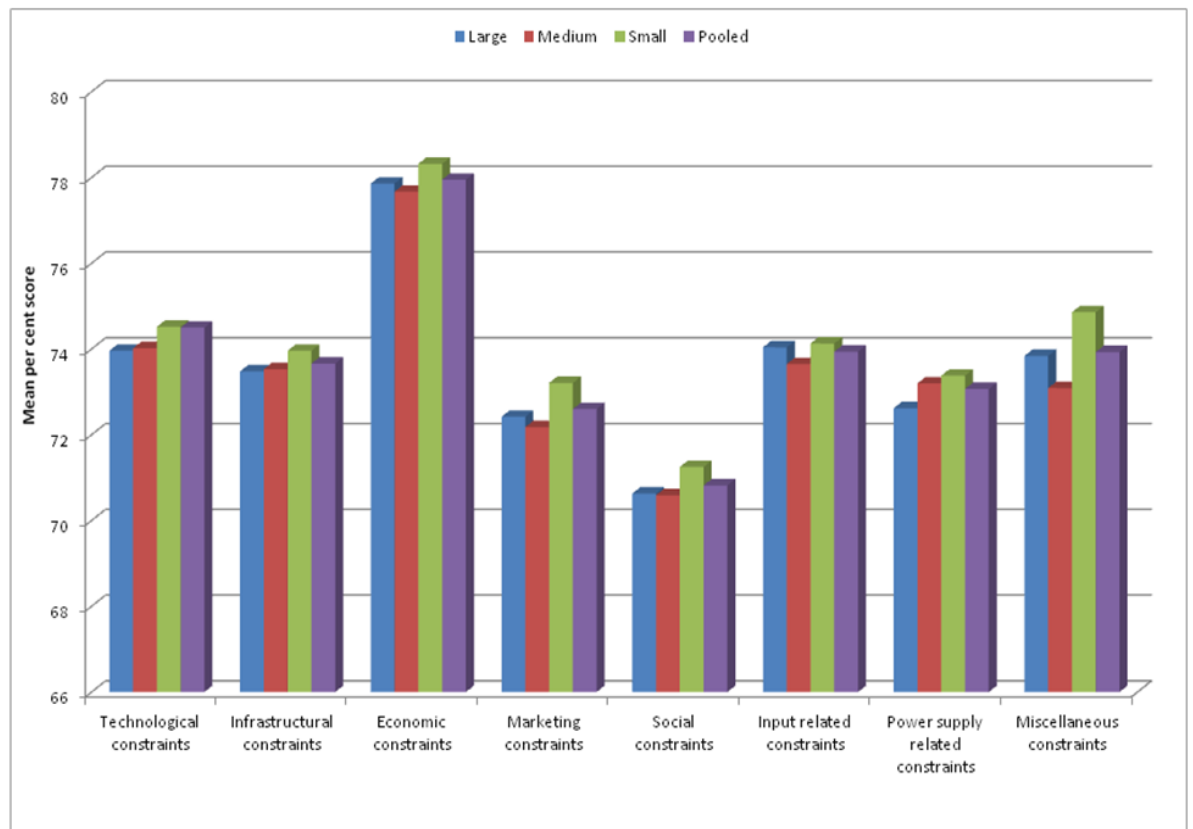


Fig. 47 Relative position of various constraints as perceived by the poultry farmers

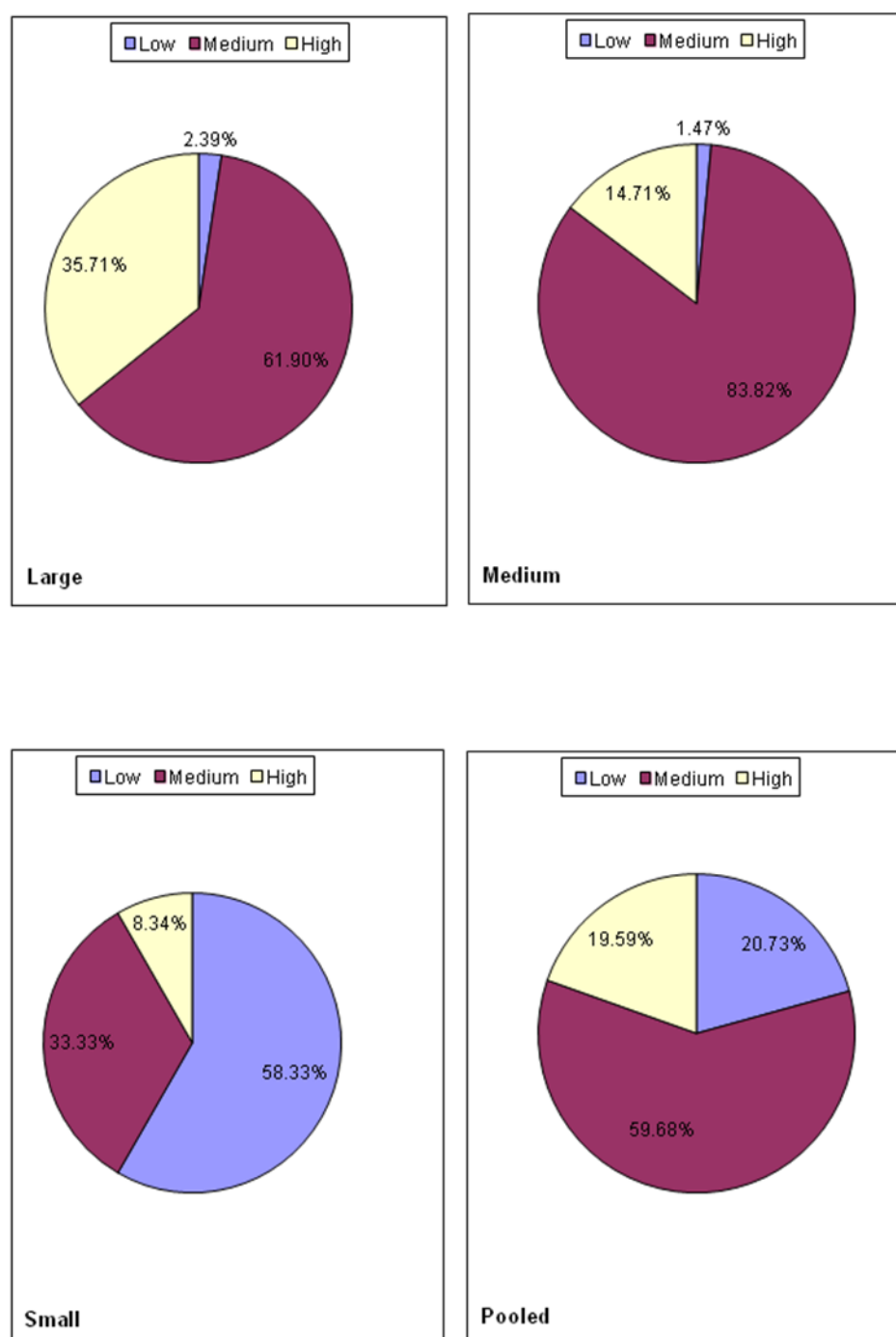


Fig. 12 Knowledge level of poultry farmers about the recommended poultry farming practices

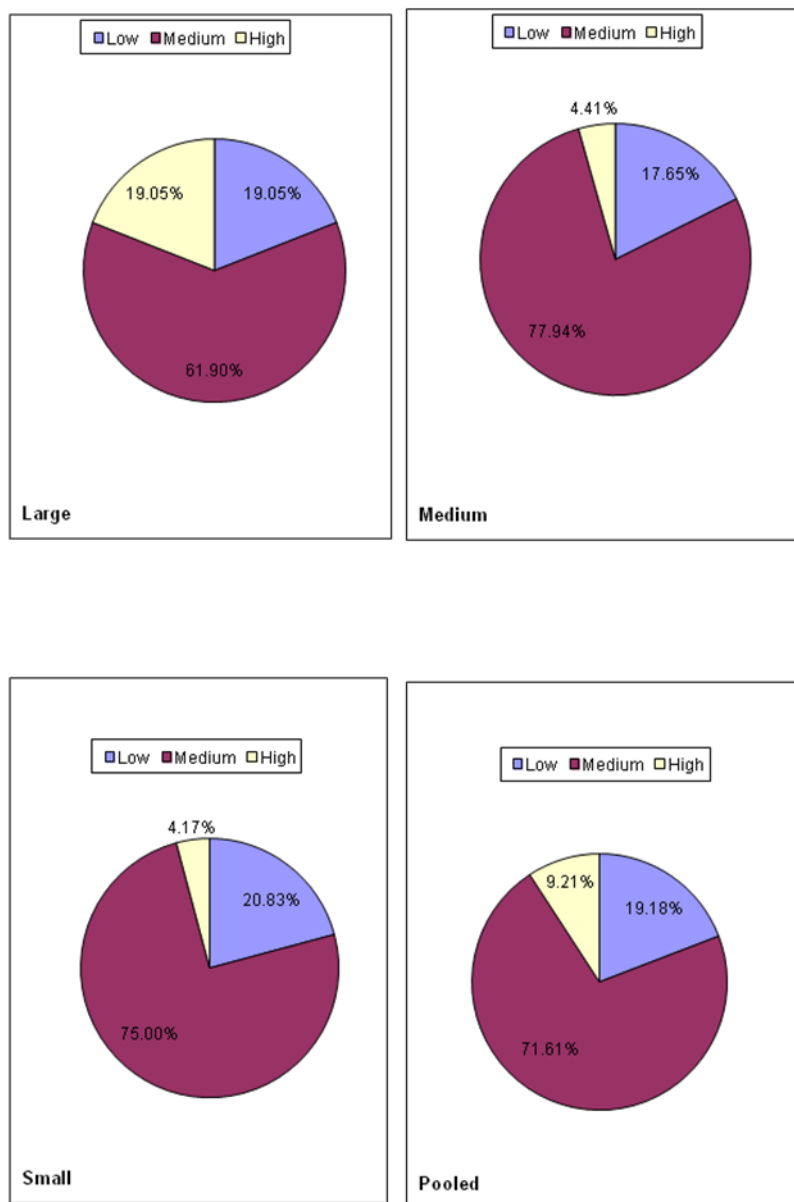


Fig. 25 Adoption of recommended poultry farming practices by the poultry farmers

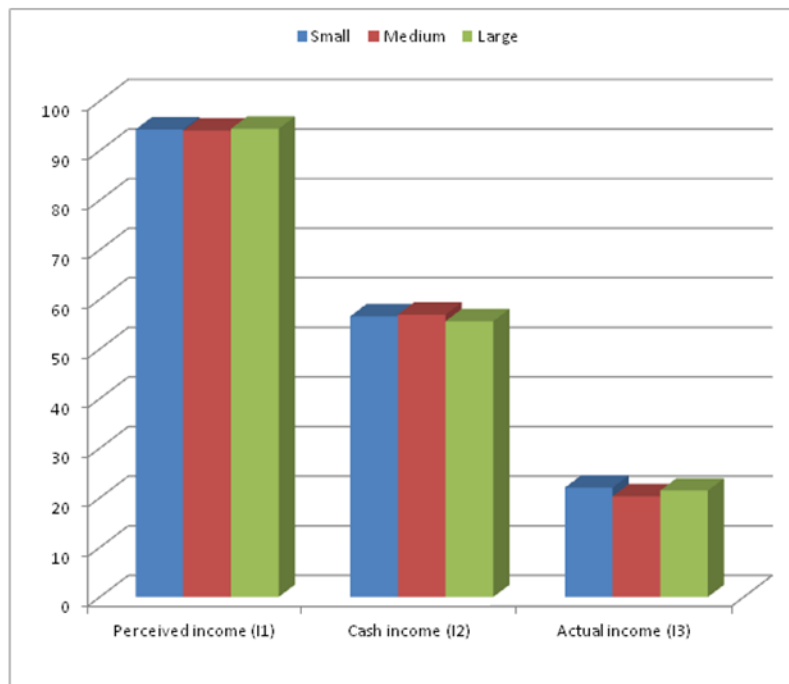


Fig. 37 Economic contribution of poultry farmers

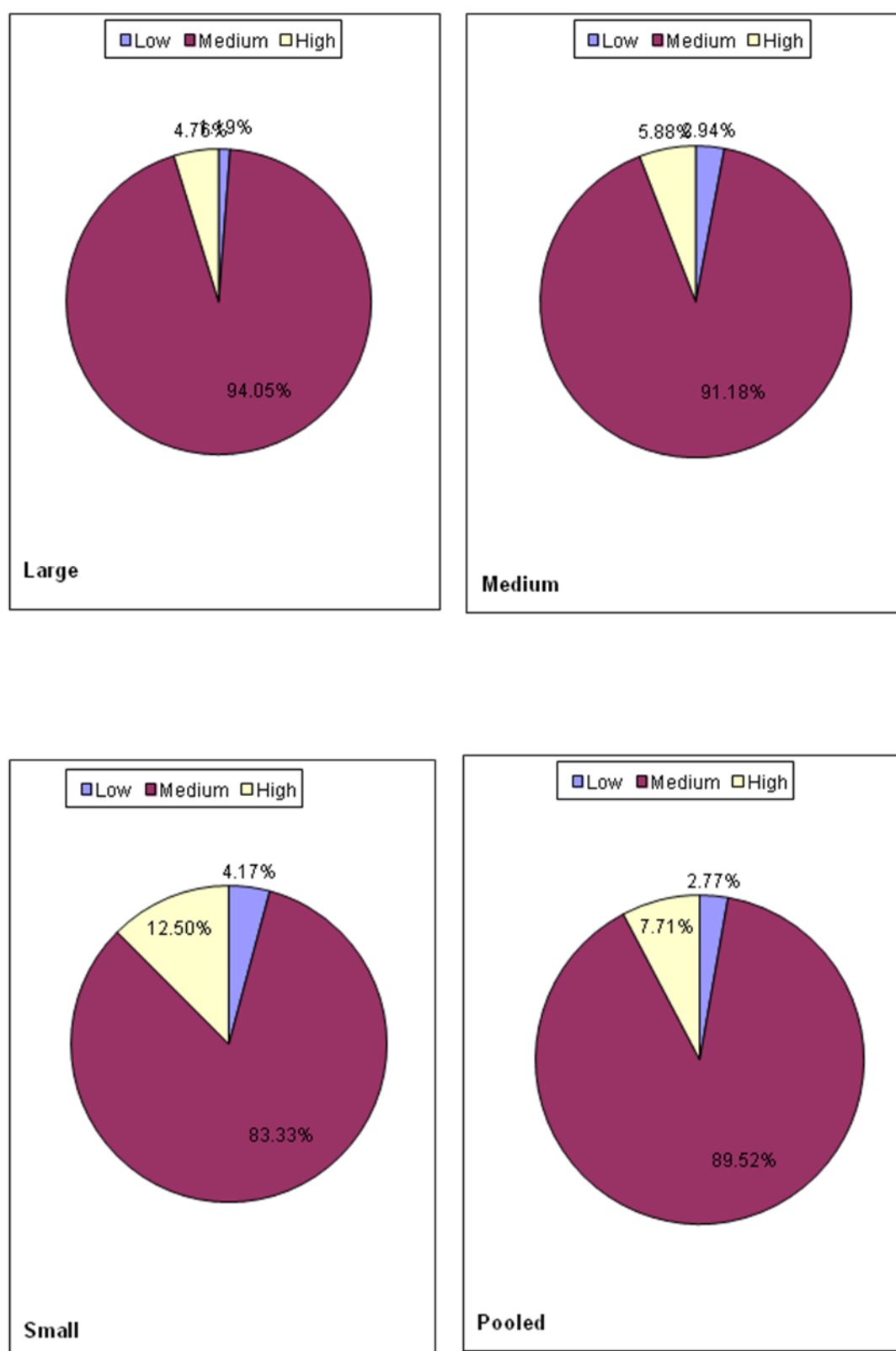


Fig. 38 Level of constraints faced by the poultry farmers in adoption of the recommended poultry farming practices

Chapter-6

SUMMARY AND CONCLUSION

The inferences of the study so brought out pertaining to the objectives have been presented in summarized form and concluded in this chapter.

6.1 INTRODUCTION

Indian poultry industry as it exists today is a mixture of traditional backyard system of poultry keeping and modern space age technology. The later has evolved from the former and has organized itself into a vertically integrated and organized form during last 40 years. The modern industry has achieved an impressive growth during this short period. The growth of industry has not only been in size but also in productivity, sophistication and quality. Modern intensive system of poultry accounts for about 70% of total poultry meat and egg production in the country at present. The traditional system of poultry keeping although still prevalent in tribal and rural areas of the country is losing its importance day-by-day under the impact of modernization and industrialization.

The origins of the poultry industry can be traced back to India. The modern hybrid hen owes its ancestry to the Red Jungle fowl of India. However, poultry farming as a commercial enterprise is a recent phenomenon in our country.

Organized poultry farming, as opposed to backyard farming was introduced in the early sixties, as a part of the government approach for planned development of the agricultural sector. Initially, it gained ground as a commercial activity due to the extension work undertaken by the various agencies like the Department of Animal Husbandry, Agricultural Universities and Technical cooperation

mission of Food and Agriculture Organization (FAO).

Development of animal husbandry is envisaged in our national plans as an integral part of a sound system of diversified agriculture. Emphasis on integration of farming with animal husbandry is essential for making an efficient use of land, labour and capital. These two activities are needed to be dovetailed for full utilization of farm by products, maintenance of soil fertility, meeting energy requirement and for generating additional income as well as employment in rural areas.

In India, about 65 per cent of the population is engaged in agriculture and rearing of livestock, subsidiary to agriculture. There exists a symbiotic relationship in men-land-livestock ecosystem. Livestock comprising of mainly cattle, buffaloes and poultry have a complementary, supplementary and sustainable relationship with crop under mixed farming system prevalent in our country.

Poultry products processing is a fast growing industry all over the world. In addition to broilers being exclusively grown for meat purposes, the layers after their completion of production period are also processed for meat. The southern states of our country contribute nearly 60-70% of broiler production of the country. The layers industry once again is represented more in the southern states especially, Andhra Pradesh, Tamil Nadu and Maharashtra, producing nearly 70% eggs to the country. Presently about 800 hatcheries are operating in the country. The National Institute of nutrition has recommended 180 eggs and 11 kg of meat for per capita consumption per annum. At present, as pre figures of ministry

of food processing, per capita availability of meat is 1.6 kg that of eggs is 1.8 kg or 42 eggs. Average consumption of eggs in major cities is 170 eggs, in smaller cities 40 eggs, in developed rural areas 20 eggs, and in undeveloped rural areas it is only 5 eggs. Only 20% of Indian population is vegetarian. India is the fifth largest producer of eggs and ninth largest producer of poultry meat (42 / Agriculture Today, June, 2012)

Jaipur district is third in rank in Rajasthan in poultry population having organized poultry farms. Jaipur district have about 3.38 lakhs total poultry population (Directorate of Animal Husbandry, Jaipur).

A large pool of manpower including unemployed youth, small farmers, self employees, part time farmers and retired personnel have adopted the profession of poultry farming in the district. In addition, there are other people who are indirectly associated with this profession as feed supply agents, equipment manufactures, pharmaceutical dealers, transporters, labourers etc.

Even though Jaipur district is the third in organized poultry farms yet the progress of poultry production doesn't seems to be satisfactory. Present investigation will be an effort to understand the clear picture of poultry production regarding knowledge, adoption and constraints faced by poultry farmers. The present investigation was undertaken with the following specific objectives:

- (vi) To assess the knowledge level of poultry farmers regarding recommended poultry farming practices.
- (vii) To measure the extent of adoption of recommended poultry farming practices by the farmers.
- (viii) To measure the contribution of poultry farming in the overall economy of poultry farmers.

- (ix) To identify the constraints as perceived by the poultry farmers in adoption of recommended poultry farming practices.
- (x) To explore the modalities for future prospects of improvement in poultry farming.

6.2 Methodology

For selection of the respondents a list of all the organized poultry farms was prepared, the number of these farms 200 (livestock census, 2007).

On the basis of number of poultry possessed by them, the respondents were divided into three categories viz., large, medium and small poultry farmers, respectively.

Respondents possessing up-to 1000 birds were formed as small poultry farmer, those possessing 1000-2000 birds, as medium poultry farmers and all those possessing poultry birds above 2000 formed the third category i.e. large poultry farmers.

A list of total number of large, medium and small poultry farmers of the selected district was prepared. A sample size of 200 organized poultry farmers were selected for the study purpose..

6.3 Collection of research data

Data for the study were collected from the selected poultry farmers by employing face-to-face interview technique. Thereafter hypotheses were formulated and appropriate statistical tests were used to arrive at specific conclusions. The statistical measures used were percentage, Mean Percent Score, Mean, Standard Deviation and Z-test.

6.4 MAJOR FINDINGS

The main findings of the study are as follows :

6.4.1 PERSONAL CHARACTERISTICS OF THE SELECTED POULTRY FARMERS.

6.4.1.1 AGE LEVEL OF THE POULTRY FARMERS

It was revealed regarding the age group of the poultry farmers that 147 (74.72 per cent) belonged to the middle age group of 38-50 years. The poultry farmers reported from the young and old categories were 36 (17.28 per cent) and 17 (8.00 per cent) respectively.

6.4.1.2 Education level of the poultry farmers

It was revealed regarding education of the poultry farmers that 26.60% were educated up to middle standard followed by 24.21% of them educated up to secondary standard. While 16.51% of the poultry farmers were educated up to higher secondary standard, 14.11% educated up to primary level and 7.42% of them were illiterate. Only 6.93% of the poultry farmers were graduate and 4.25% of poultry farmers were post graduate and above.

6.4.1.3 Caste of the poultry farmers

It was revealed that regarding caste of poultry farmers that 73 (36.50 per cent) were belonged to the other backward caste. Whereas, 54 (27.00 per cent) were from general caste, 50 (25.00 per cent) were from scheduled caste and 23 (11.36) were from scheduled tribe category.

6.4.1.4 Size of poultry unit of the poultry farmers

It was revealed regarding the poultry farmers that 84 (42.00 per cent) had large poultry farms. Whereas, 68 (34.00 per cent) and 48 (24.00 per cent) of poultry farmers, were having medium and small poultry farms, respectively

6.4.1.5 Farming experience of the poultry farmers

It was revealed regarding experience of poultry farmers that 116 (58.66 per cent) had medium experience in poultry farming.

Whereas, 67(32.43 per cent) poultry farmers had low and 17 (8.90 per cent) poultry farmers had high experience in poultry farming.

6.4.1.6 Occupation of the poultry farmers

It was revealed occupation of poultry farmers that 69 (34.18 per cent) were labour Whereas, 64 (32.32 per cent) were having agricultural/animal husbandry, 61 (30.33 per cent) were having caste occupation, 4 (2.27 per cent) were having business and 2 (0.88 per cent) were having service as their main occupation.

6.4.1.7 Social participation of the poultry farmers

It was revealed that social participation of poultry farmers, 35.79% were member of one organization, 34.97% were not member of any organization, 15.18% were member of more than one organization, 7.40% were member of committee, 3.35% were leader in organization and 2.67% were public.

6.4.1.8 Source of credit of the poultry farmers

It was revealed source of credit of poultry farmers, 65 (33.52 per cent) were taking credit from commercial banks, Whereas, 52 (25.21 per cent) from cooperatives, 39 (18.85 per cent) from money lenders, 25 (12.53 per cent) from relatives and 19 (9.88 per cent) were having other sources of credit.

6.4.1.9 Proximity to market of the poultry farmers

It was revealed 84 (41.86 per cent) poultry farmers were having market distance 1-5 km whereas, 67 (34.50 per cent) were having less than 1 km, 42 (20.46 per cent) were having 5-10 km, 5 (2.37 per cent) were having 10-20 km and 2 (0.79 per cent) were having above 20 km.

6.4.1.10 Size of land holding of the poultry farmers

It was reveal that size of land holding of poultry farmers, 87 (43.29 per cent) were having small holding. Whereas, 78 (39.22 per cent) were having marginal holding, 19 (9.80 per cent) were having big holding and 16 (7.69 per cent) were having landless.

6.4.2 Knowledge level of poultry farmers about the recommended poultry farming practices

- (a) It was observed that 61.90 per cent of the large farmers were found to have medium knowledge level about the recommended poultry farming practices, While 35.71 per cent large farmers were found to have high knowledge level whereas, 2.39 per cent farmers were found to have low knowledge level regarding recommended poultry farming practices.
- (b) It was also noted that 83.82 per cent medium farmers were found to have medium knowledge level whereas 14.71 and 1.47 per cent medium farmers were having high and low knowledge, respectively regarding recommended poultry farming practices.
- (c) It was found that 58.33 per cent small poultry farmers had low knowledge level, While 33.33 and 8.34 per cent had medium and high knowledge, respectively regarding recommended poultry farming practices.
- (d) There was a highly significant difference between the large and medium, large and small, and medium and small poultry farmers knowledge, about the recommended poultry farming practices.

6.4.2.1 Knowledge level of poultry farmers about recommended chick procurement practices of poultry farming

- (a) It was found that 69.61 per cent knowledge about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was observed that 76.53 per cent overall knowledge about recommended poultry farming practices was found in case of large farmers whereas, 76.05 and 56.25 per cent knowledge was found among medium and small poultry farmers, respectively about recommended poultry farming practices.
- (c) The maximum knowledge was found about “optimum weight of one day old chick” (MPS 82.25) and the minimum knowledge was about “concept of broiler” (MPS 61.71).

6.4.2.2 Knowledge level of poultry farmers about recommended brooding practices of poultry farming

- (a) It was found that 71.54 per cent knowledge about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was observed that 76.62 per cent overall knowledge about recommended poultry farming practices was found in case of large farmers whereas, 77.40 and 60.60 per cent knowledge was found among medium and small poultry farmers, respectively about recommended poultry farming practices.
- (c) The maximum knowledge was found about “Mixing of tonic in the water to be given to chicks” (MPS 83.23) and the minimum knowledge was about “Offering plenty of water to chicks before feeding” (MPS 59.08).

6.4.2.3 Knowledge level of poultry farmers about the recommended litter management practices of poultry farming

- (a) It was found that 71.48 per cent knowledge about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was observed that 77.08 per cent overall knowledge about recommended poultry farming practices was found in case of large

farmers whereas, 74.63 and 62.75 per cent knowledge was found among medium and small poultry farmers, respectively about recommended poultry farming practices.

- (c) The maximum knowledge was found about “Percentage of moisture to be maintained in litter” (MPS 81.49) and the minimum knowledge was about “Thickness of litter material spread at the time of starting a lot” (MPS 62.84).

6.4.2.4 Knowledge level of poultry farmers about recommended temperature and light regulation practices of poultry farming

- (a) It was found that 71.93 per cent knowledge about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was observed that 77.98 per cent overall knowledge about recommended poultry farming practices was found in case of large farmers whereas, 80.88 and 56.94 per cent knowledge was found among medium and small poultry farmers, respectively about recommended poultry farming practices.
- (c) The maximum knowledge was found about “Temperature of poultry house during first to fifth weeks” (MPS 83.04) and the minimum knowledge was about “Source of lighting for birds” (MPS 58.09).

6.4.2.5 Knowledge level of poultry farmers about recommended feeding practices of poultry farming

- (a) It was found that 74.31 per cent knowledge about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was observed that 81.96 per cent overall knowledge about recommended poultry farming practices was found in case of large farmers whereas, 78.60 and 62.39 per cent knowledge was found among medium and small poultry farmers, respectively about recommended poultry farming practices.
- (c) The maximum knowledge was found about “The consumed feed be recorded and tested daily” (MPS 80.40) and the minimum

knowledge was about “Feed requirement of a day old chick” (MPS 65.71).

6.4.2.6 Knowledge level of poultry farmers about recommended watering practices of poultry farming

- (a) It was found that 76.37 per cent knowledge about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was observed that 84.30 per cent overall knowledge about recommended poultry farming practices was found in case of large farmers whereas, 81.95 and 62.87 per cent knowledge was found among medium and small poultry farmers, respectively about recommended poultry farming practices.
- (c) The maximum knowledge was found about “Proper cleaning the water before serving to birds” (MPS 84.25) and the minimum knowledge was about “Source of water for birds” (MPS 67.97).

6.4.2.7 Knowledge level of poultry farmers about recommended equipment and spacing practices of poultry farming

- (a) It was found that 73.85 per cent knowledge about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was observed that 82.64 per cent overall knowledge about recommended poultry farming practices was found in case of large farmers whereas, 80.26 and 58.68 per cent knowledge was found among medium and small poultry farmers, respectively about recommended poultry farming practices.
- (c) The maximum knowledge was found about “The feeding space should be provided to chick” (MPS 80.80) and the minimum knowledge was about “The dimensions of an ideal chick feeder” (MPS 66.85).

6.4.2.8 Knowledge level of poultry farmers about common diseases and parasites of poultry farming

- (a) It was found that 74.12 per cent knowledge about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was observed that 81.63 per cent overall knowledge about recommended poultry farming practices was found in case of large farmers whereas, 77.94 and 62.79 per cent knowledge was found among medium and small poultry farmers, respectively about recommended poultry farming practices.
- (c) The maximum knowledge was found about “The common disease in poultry” (MPS 87.01) and the minimum knowledge was about “The more prevalent disease in your area” (MPS 65.42).

6.4.2.9 Knowledge level of poultry farmers about recommended vaccination and management practices of poultry farming

- (a) It was found that 75.00 per cent knowledge about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was observed that 84.18 per cent overall knowledge about recommended poultry farming practices was found in case of large farmers whereas, 81.30 and 59.52 per cent knowledge was found among medium and small poultry farmers, respectively about recommended poultry farming practices.
- (c) The maximum knowledge was found about “The main vaccine used in poultry” (MPS 81.06) and the minimum knowledge was about “The vaccination schedule to be followed for poultry disease” (MPS 68.93).

6.4.2.10 Knowledge level of poultry farmers about recommended sanitation practices of poultry farming

- (a) It was found that 72.32 per cent knowledge about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.

- (b) It was observed that 80.61 per cent overall knowledge about recommended poultry farming practices was found in case of large farmers whereas, 77.73 and 58.63 per cent knowledge was found among medium and small poultry farmers, respectively about recommended poultry farming practices.
- (c) The maximum knowledge was found about “The phenyl soaked foot pad placed at the door of the shed” (MPS 79.89) and the minimum knowledge was about “The outside persons are not allowed in poultry farm” (MPS 61.84).

6.4.2.11 Knowledge level of poultry farmers about recommended record keeping and marketing practices of poultry farming

- (a) It was found that 72.68 per cent knowledge about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was observed that 77.89 per cent overall knowledge about recommended poultry farming practices was found in case of large farmers whereas, 75.00 and 65.17 per cent knowledge was found among medium and small poultry farmers, respectively about recommended poultry farming practices.
- (c) The maximum knowledge was found about “Record keeping of poultry feeds” (MPS 81.30) and the minimum knowledge was about “Demand record of poultry products” (MPS 67.60).

6.4.2.12 Practice-wise overall knowledge level of the poultry farmers about recommended poultry farming practices

- (a) It was found that 74.19 per cent knowledge about recommended poultry farming practices was found among all the eleven aspects of poultry farming.
- (b) It was observed that 81.67 per cent overall knowledge about recommended poultry farming practices was found in case of large farmers whereas, 79.90 and 61.82 per cent knowledge was found among medium and small poultry farmers, respectively about recommended poultry farming practices.

- (c) The maximum knowledge was found about “Brooding practices” (MPS 87.44) and the minimum knowledge was about “Chick procurement practices” (MPS 69.61).

6.4.3 Adoption of poultry farmers about the recommended poultry farming practices

- (a) It was observed that 61.90 per cent of the large farmers were found to have medium adoption whereas similarly 19.05 per cent medium farmers were having low and high adoption, respectively of recommended poultry farming practices.
- (b) It was also noted that 77.94 per cent medium farmers were found to have medium adoption whereas 17.65 and 4.41 per cent medium farmers were having low and high adoption, respectively of recommended poultry farming practices.
- (c) It was found that 75.00 per cent small poultry farmers had medium adoption. While 20.83 and 4.17 per cent had low adoption and high adoption, respectively of recommended poultry farming practices.
- (d) There was a non- significant difference between the large and medium, highly significant large and small and also between medium and small farmers extent of adoption of the recommended poultry farming practices.

6.4.3.1 Adoption of recommended chick procurement practices by the poultry farmers

- (a) It was found that 79.16 per cent adoption about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was also observed that 80.17 per cent overall adoption about recommended poultry farming practices was found in case of large farmers whereas, 79.31 and 78.00 per cent adoption was found among small and medium poultry farmers, respectively about recommended poultry farming practices.
- (c) The maximum adoption was found about “Purchasing of chicks from reputed hatchery” (MPS 82.60) and the minimum adoption

was about “Purchasing chicks from a nearby hatchery” (MPS 76.36).

6.4.3.2 Adoption of recommended brooding practices by the poultry farmers

- (a) It was found that 76.38 per cent adoption about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was also observed that 79.00 per cent overall adoption about recommended poultry farming practices was found in case of medium farmers whereas, 77.59 and 72.53 per cent adoption was found among large and small poultry farmers, respectively about recommended poultry farming practices.
- (c) The maximum adoption was found about “Dipping beaks of chicks after receiving from hatchery” (MPS 83.21) and the minimum adoption was about “Removing chick guard after prescribed days” (MPS 65.63).

6.4.3.3 Adoption of recommended litter management practices by the poultry farmers

- (a) It was found that 79.96 per cent adoption about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was also observed that 82.01 per cent overall adoption about recommended poultry farming practices was found in case of large farmers whereas, 79.41 and 78.47 per cent adoption was found among medium and small poultry farmers respectively about recommended poultry farming practices.
- (c) The maximum adoption was found about “Maintenance of required percentage of moisture in the litter” (MPS 92.86) and the minimum adoption was about “Slight hoeing of litter material at regular intervals” (MPS 70.66).

6.4.3.4 Adoption of recommended temperature and light regulation practices by the poultry farmers

- (a) It was found that 79.74 per cent adoption about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was also observed that 82.98 per cent overall adoption about recommended poultry farming practices was found in case of medium farmers whereas, 78.57 and 77.68 per cent adoption was found among large and small poultry farmers respectively about recommended poultry farming practices.
- (c) The maximum adoption was found about “Keeping required temperature of house during 1st week” (MPS 85.78) and the minimum adoption was about “Use of alternative heating arrangement in case of power failure” (MPS 72.20).

6.4.3.5 Adoption of recommended feeding practices by the poultry farmers

- (a) It was found that 81.43 per cent adoption about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was also observed that 83.38 per cent overall adoption about recommended poultry farming practices was found in case of medium farmers whereas, 81.04 and 79.88 per cent adoption was found among small and large poultry farmers respectively about recommended poultry farming practices.
- (c) The maximum adoption was found about “Balanced ration for feeding poultry” (MPS 87.25) and the minimum adoption was about “Recommended differential doses of feed to poultry birds at different age groups” (MPS 77.98).

6.4.3.6 Adoption of recommended watering practices by the poultry farmers

- (a) It was found that 80.46 per cent adoption about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was also observed that 83.33 per cent overall adoption about recommended poultry farming practices was found in case of small farmers whereas, 79.52 and 78.53 per cent adoption was found among large and medium poultry farmers respectively about recommended poultry farming practices.
- (c) The maximum adoption was found about “Proper cleaning the water before serving to birds” (MPS 87.25) and the minimum adoption was about “Cleaning the chick drinkers as recommended” (MPS 73.93).

6.4.3.7 Adoption of recommended equipment and spacing practices by the poultry farmers

- (a) It was found that 80.99 per cent adoption about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was also observed that 83.82 per cent overall adoption about recommended poultry farming practices was found in case of medium farmers whereas, 79.68 and 79.46 per cent adoption was found among small and large poultry farmers respectively about recommended poultry farming practices.
- (c) The maximum adoption was found about “Required waterer space to the birds at different ages” (MPS 85.66) and the minimum adoption was about “Required waterer space to the birds” (MPS 78.66).

6.4.3.8 Adoption of common disease management by the poultry farmers

- (a) It was found that 81.49 per cent adoption about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was also observed that 85.48 per cent overall adoption about recommended poultry farming practices was found in case of medium farmers whereas, 80.35 and 78.64 per cent adoption was

found among large and small poultry farmers respectively about recommended poultry farming practices.

- (c) The maximum adoption was found about “Consult veterinarian/laboratory” (MPS 87.13) and the minimum adoption was about “Vaccination of chicks at right time” (MPS 76.35).

6.4.3.9 Adoption of recommended sanitation practices by the poultry farmers

- (a) It was found that 76.19 per cent adoption about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was also observed that 78.17 per cent overall adoption about recommended poultry farming practices was found in case of large farmers whereas, 75.74 and 74.65 per cent adoption was found among medium and small poultry farmers respectively about recommended poultry farming practices.
- (c) The maximum adoption was found about “Layer of lime or phenyl soaked footpad at the door of shed” (MPS 95.25) and the minimum adoption was about “Restricting visits of outsiders in the farm” (MPS 59.39).

6.4.3.10 Adoption of recommended recorded keeping and marketing practices by the poultry farmers

- (a) It was found that 76.58 per cent adoption about recommended poultry farming practices was found among all the three categories (large, medium and small) of poultry farmers.
- (b) It was also observed that 80.10 per cent overall adoption about recommended poultry farming practices was found in case of large farmers whereas, 75.89 and 73.74 per cent adoption was found among small and medium poultry farmers respectively about recommended poultry farming practices.
- (c) The maximum adoption was found about “Keeping records of poultry feed consumption” (MPS 85.87) and the minimum adoption was about “Keeping one self aware of demand of poultry products” (MPS 67.02).

6.4.3.11 Practice-wise overall adoption of the poultry farmers about recommended poultry farming practices

- (a) It was found that 78.43 per cent adoption about recommended poultry farming practices was found among among all the tenth aspects of poultry farming.
- (b) It was also observed that 79.16 per cent overall adoption about recommended poultry farming practices was found in case of medium farmers whereas, 78.68 and 77.48 per cent adoption was found among large and small poultry farmers respectively about recommended poultry farming practices.
- (c) The maximum adoption was found about “Disease management practices” (MPS 81.49) and the minimum adoption was about “Chick procurement practices” (MPS 70.25).

6.4.4 Contribution of poultry farming in overall economy of poultry farmers

- 1. The economic contribution of poultry farming as perceived by the poultry farmers of different categories was 94.29, 94.07 and 94.41 per cent of the gross income from all sources in case of small, medium and large poultry farmers, respectively.
- 2. It was also observed that poultry farming components contributed about 21.47 to 22.05 per cent of the actual income of the poultry farmers.

6.4.5 Constraints as perceived by the poultry farmers in adoption of recommended poultry farming practices

- (e) It was observed that 94.05 per cent of the large farmers were found to have medium constraints whereas 4.76 and 1.19 per cent farmers were having high and low constraints, respectively of recommended poultry farming practices
- (f) It was also noted that 91.18 per cent medium farmers were found to have medium constraints whereas 5.88 and 2.94 per cent medium farmers were having high and low constraints, respectively of recommended poultry farming practices.

- (g) It was found that 83.33 per cent small poultry farmers had medium constraints. While 12.50 and 4.17 per cent had high constraints and low constraints, respectively of recommended poultry farming practices.
- (h) There was a non- significant difference between the large and medium, and large and small, and significant difference between medium and small farmers extent of adoption of the recommended poultry farming practices.

6.4.5.1 Technological constraints in adoption of recommended poultry farming practices as perceived by poultry farmers

The majority of the poultry farmers (about 82.93 per cent) perceived as most important technological constraints were “Lack of knowledge in preparing balanced ration” and “Lack of knowledge about reputed hatcheries” (78.10 per cent). Whereas, “Lack of bio-security measures” (64.14 per cent) had been perceived as the least important technological constraint in adoption of recommended poultry farming practices.

6.4.5.2 infrastructural constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

The majority of the poultry farmers (about 85.67 per cent) perceived that “Shortage of floor space” and “Poor feed storage facilities” (84.72 per cent) were the most important infrastructural constraints. Whereas, “Lack of rodents and predator proof houses” (56.46 per cent) had been perceived as the least important infrastructural constraints in adoption of recommended poultry farming practices.

6.4.5.3 Economic constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

The majority of the poultry farmers (about 84.42 per cent) perceived that “Wastage of feed by birds” and “High cost of chicks” (84.39 per cent) were the most important economic constraints. Whereas, “Poor financial condition” (70.49 per cent) had been perceived as the least

important economic constraint responsible in adoption of recommended poultry farming practices.

6.4.5.4 Marketing constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

The majority of the poultry farmers (about 82.48 per cent) perceived that “Lack of a proper marketing structure” and “Involvement of middlemen” (76.48 per cent) were the most important marketing constraint. Whereas, “Problem in marketing of eggs” (64.20 per cent) had been perceived as the least important marketing constraint in adoption of recommended poultry farming practices.

6.4.5.5 Social constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

The majority of the poultry farmers (about 79.05 per cent) perceived that “Serve criticism of poultry farmers from religious minded people” and “Lack of awareness among people about balanced human diet” (73.95 per cent) were the most important social constraints. Whereas, “Consideration of poultry as a low grade vocation in the society” (63.47 per cent) had been perceived as the least important social constraints in adoption of recommended poultry farming practices.

6.4.5.6 Input related constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

The majority of the poultry farmers (about 84.76 per cent) perceived that “High mortality of chicks” and “Spurious drugs” (83.26 per cent) were the most important input related constraints. Whereas, “Small size egg of layers” (59.79 per cent) had been perceived as the least important input related constraint in adoption of recommended poultry farming practices.

6.4.5.7 Power supply related constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

The majority of the poultry farmers (about 78.36 per cent) perceived that “Poor performance of non electric power sources” and “High rates of power charges” (77.76 per cent) were the most important

power supply constraints. Whereas, “Unscheduled power cuts” (63.01 per cent) had been perceived as the least important power supply constraints in adoption of recommended poultry farming practices.

6.4.5.8 Miscellaneous constraints in adoption of recommended poultry farming practices as perceived by the poultry farmers

The majority of the poultry farmers (about 80.03 per cent) perceived that “Un-availability of veterinary doctors in time” and “High degree of risk involved” (79.15 per cent) were the most important miscellaneous constraints. Whereas, “Uncertainty of vocation” (69.80 per cent) had been perceived as the least important miscellaneous constraint in adoption of recommended poultry farming practices.

6.4.5.9 Relative position of various constraints as perceived by the different categories of poultry farmers

It was unveiled that the most important constraint perceived by the respondents was economic constraint followed by technological and input related constraints. However, the least perceived constraints were social constraints (Table 5.50).

6.5 SUGGESTIONS AND RECOMMENDATIONS

Recommendations:

In order to improve the productivity of poultry, the following recommendation are made based upon the findings of the study.

6.5.1 Since the majority of poultry farmers possessed medium knowledge level about recommended poultry farming practices so there is a scope to convert their medium knowledge level into high knowledge level through disseminating the knowledge about recommended poultry farming practices. The special emphasis may be given on vaccination management, temperature and light regulation, sanitation, litter management and feeding practices. The poultry farmers may be trained in feed requirement of birds at

different age group which may be prepared in the form of charts or table. The knowledge about to control the internal as well as external disease of poultry birds may be enhanced through organizing farmers-scientists interaction and meeting.

6.5.2 The majority of the poultry farmers had medium adoption of recommended poultry farming practices. Hence their extent of adoption may be converted from low to medium and medium to high about recommended poultry farming practices. For increasing the extent of adoption level, the poultry farmers may be trained in different practices of poultry farming such as preparation of poultry feed, floor and feed space required for different age group of birds, sanitation practices by encouraging them to bring the dead birds for post-mortem so that out break of diseases may be prevented and also restrict the visit of out siders into the poultry farm.

6.5.3 In order to improve the economic condition of small poultry farmers through low cost inputs like poultry housing technique, availability of chicks, feed for different age groups of birds, medicine, restrictions on middle men through establishing regulated market by government agency, regular visit of poultry experts team for diagnosing various diseases of poultry and to improve health of birds and production in poultry farming area.

6.5.4 Since majority of poultry the farmers faced the lack of knowledge about preparing balanced ration and reputed hatcheries, shortage of floor space and poor feed storage facilities in technical and infrastructural constraints. To minimize these constraints proper training on various poultry

farming practices and printed materials may be provided by experts of poultry department in simple language to poultry farmers.

- 6.5.5 Since majority of the poultry farmers faced the wastage of feed by birds, high cost of chicks and lack of a proper marketing structure. To overcome these constraints proper knowledge and training on various poultry farming practices should be imparted to the farmers.
- 6.5.6 To minimize the problem of severe criticism of poultry farming by some religious minded people and lack of awareness among people about balanced human diet, awareness camp may be organized in the study area for encouraging them to use eggs in balanced diet and its role in health of human beings.
- 6.5.7 To minimize the problem of poor performance of non electric power sources, non availability of information related to poultry farming, poultry farmers may be given an alternative resource of electricity at poultry farm. Literatures developed by poultry experts/ scientists may also be provided to poultry farmers by cooperative societies in simple language so that they can use at their poultry farm to the maximum extent for increasing production at poultry farm.

5.7 Suggestions

- 5.7.1 Credit / Loan should be provided to the poultry farmers on reduced rate.
- 5.7.2 Facilities of feed testing laboratory should be provided at local level.
- 5.7.3 At the time of out break of diseases, free vaccination should be provided to farmers by government.
- 5.7.4 Feed should be made available at reasonable rate.
- 5.7.5 Poultry farmers should be encouraged to start own feed mill by providing feed ingredient on reduced rate.
- 5.7.6 Chicks of high producing strain should be provided to poultry farmers on reasonable rate.
- 5.7.7 Bird flue resistant strain of poultry bird should be developed.
- 5.7.8 Research should be carried out on diseases resistant strain of poultry birds.
- 5.7.9 Poultry farm should be provided enough electric supply on reduced rate.
- 5.7.10 Government should help farmers to start the eggs powder making factory.
- 5.7.11 Eggs prices should be supported optimum.
- 5.7.12 Eggs should be included in mid- day lunch to school students.
- 5.7.13 Small farmers should be provided subsidy by government to start small scale poultry farm.

Conclusion

1. There was significant difference in the knowledge level between large and medium, and large and small ,and medium and small poultry farmers with regards to poultry aspects.
2. The poultry farmers had knowledge about recommended poultry farming practices, ranging from 69.61 to 87.44 mean per cent score.

3. there was a non-significant difference in the adoption level between large and medium and significant difference in the adoption level between large and small, and medium and small poultry farmers of recommended poultry farming practices.
4. The poultry farmers had adoption of recommended poultry farming practices, ranging from 70.25 to 81.49 mean per cent score.
5. the results revealed that poultry rearing component contributed about 21 to 22 per cent of the actual income of the respondents.
6. there was a non-significant difference in the constraints between large and medium, and large and small, and significant difference in the constraints between medium and small poultry farmers of recommended poultry farming practices.
7. The respondents faced a number of economic constraints (MPS 77.95) in adoption of recommended poultry farming practices which was ranked first followed by technological constraints (MPS 74.50). Whereas least constraints faced was the social constraints (MPS 70.82).

LITERATURE CITED

- Abdallah, A. and Khraisat, A. Al (2013). "Economic Analysis of Poultry (Broiler) Production in Amman and Irbid District in Jordan". *International Journal of Life Sciences Research*, Vol. 1, Issue 1, pp:(24-30)
- Anonymous (1994). "India poultry industry vis-à-vis policy options". *Indian Poultry Man*, X (1): 7 – 14.
- Anonymous (2003). "Promotional programmes for rural non- farm sector (RNFS)". *National Bank for Agriculture and Rural Development (NABARD)*, F-Shastrinagar Extension, Jammu.
- Awasthi, H.K.; Singh, P.R., Khan, M.A and Sharma, P.N. (2002). "Knowledge and attitude of dairy farmers towards improved dairy practices". *Ind. J. of Extn. Edu.*, 38 (1&2) : 104-105.
- Balamurugan, V. and Manoharan, M. (2013). "Cost and benefit of investment in integrated broiler farming- A case study". *Int. J. Curr. Res. Aca. Rev.*, 2 (4) : pp. 114-123.
- Banerjee, M. and Talukdar, R.K. (1997) "Problems in women entrepreneurship in Assam". *Indian Journ. of Extn. Edn.*, Vol. XXXVIII (3&4) : 107-114.
- Behra, B. and Banja, B.K. (2005). "Broiler farming promotes sustainable livelihood". *Agriculture Extension Review*, Sept.-Oct., 8-9.

Belsare, V.P.; Kapdi, S.S. and Varshneya, M.C. (2007). Electricity generation using cattle dung-An overview. National Symposium on Recent Trends in Policy Initiative and Technological Interventions for Rural Prosperity in Small Holder Livestock Production Systems Held at College of Veterinary Science, Tirupati, 20 to 22nd June, (65-67).

Bhati, D.S. and Sharma, S.K. (2002). "Knowledge level of different categories of farmers about improved mustard production technology". *Raj. Journ. of Extn. Edn.*, X : 23-27.

Bhati, J.P., Patel, R.B. and Joshi, V.D. (1997-98). "Impact of short term training in terms of increase in knowledge, adoption and yield of the farmers". *Guj. Journ. of Extn. Edn.*, Vol. VIII & IX : 33-36.

Bhuyian, M.A.S., Akanda, M.K.I., Hasanuzzaman, S.M. and Tipu, S.U. (2013) "Farmers communication exposure and knowledge in poultry farming". *J. Bangladesh Agril. Univ.* 11 (2) 2013 : 177-182.

Chaudhary, M., Intodia, S.L. and Dashora, P.K. (1999). "Economic contribution of cattle farming". *Raj. J. of Extn. Edu.*, 7 : 73-75.

Chauhan, N.B and Siddharth, D.S.D. (1999-2000). "Consequences of personality traits of poultry entrepreneurs on adoption of modern practices." *Guj. J. of Extn. Edu.*, Vol. X & XI :17-19.

Chauhan, N.B. and Rathore, O.S. (1997-98). "Sway of selected factors on technical knowledge of small peasants". *Guj. Journ. of Extn. Edn.*, Vol. VIII & IX : 95-97.

Choudhary, M.C. and Panjabi, N.K. (2002). "Knowledge assessment of

rural poors about improved practices of social forestry". *Raj. Journ. of Extn. Edn.*, X : 28-33.

Chug, M. (1995). An exploratory study of dairy farms owned by ex-serviceman in Karnal district (Haryana). M.Sc. Thesis, NDRI, Karnal.

Dana, S.S.; Khandekar, Nita and Sinha, S.P. (1995). "Factors associated with tranees' knowledge about poultry health control measures". *Ind. J. of Poultry Sci.*, XXX (1) : 92-93.

Dixit, V.B. and Narwal, R.S. (1991). "Farmers' knowledge and reaction about artificial insemination in buffaloes". *Maha. J. of Extn. Edu.*, 10 (2) : 35-38.

Dwevedi, P.K.; Singh, B.P.; Kumar, V. and Waila, T. (2011). "Socio-economic profile of animal traders and their constraints in following animal welfare practices". *Ind. J. Soc. Res.*, 52 (4) : 449-454.

Ghasura, R.S., Sheikh, A.S., Aswar, B.K., Rajpura, R.M. and Charan, R. (2013) "Constraints faced by poultry farm entrepreneurs in Banaskantha district, Gujrat". *International Journal of Rural Studies*, Vol. 20, Oct. 2013, Article 7 : 1-5.

Ghosh, S. and Chand, R. (2001). "Constraints in adoption of recommended technologies for improved dairy farming". *Ind. J. of Extn. Edu.*, XXXVII (1&2): 24-29.

Gogoi, M. and Talukdar, R.K. (2001). "Impact of mushroom cultivation training with special reference to knowledge and

adoption level". *Proceeding of 5th Agricultural Science Congress on Sustainable Development of Mountain Agriculture*, April, 4-7, Guwahati, Assam.

Goswami, P. (2001). "A comparative study on pig and poultry rearing practices in Kolasib district of Mizoram". *Proceeding of 5th Agril. Science Congress on Sustainable Development of Mountain Agriculture*, April, 4-7, Guwahati, Assam.

Hingu, N.L. and Patel, G.R. (1997-98). "Gain in knowledge by the life member farmers through krishi-Go-Vidya farm magazine". *Guj. Journ of Extn Edn.* Vol. VIII & IX : 19-22.

Intodia, S.L. and Madhur, P. (1999-2000). "Adoption pattern of farm technology". *"Guj. Journ. of Extn. Edn."*, Vol. X & XI: 5-9.

Issar, D. and Dhakar, S.D. (2002). "Level of knowledge of tribals regarding sericulture rearing practices". *Raj. Journ of Extn Edn.* X : 52-55.

Ithika , C.S., Singh, S.P. and Gautam, G. (2013) " Adoption of scientific poultry farming practices by the broiler farmers in Haryana, India". *Iranian Journal of Applied Animal Science* (2013) 3 (2) : 417- 422.

Jagadeeshwara, K., Patel, H.L. and Nail, K.V. (1997-98). "Adoption of agricultural technologies among different categories of farmers in kheda district". *Guj. Journ. of Extn. Edn.*, Vol VIII & IX: 14-18.

Jat, S.M. and Yadav, J.P. (2009). "Problem and prospects of recommended poultry farming practices in Ajmer district of Rajasthan". Ph.D. Thesis, submitted to Rajasthan Agricultural

University, Bikaner, Campus-Jobner.

Jat, S.M. and Yadav, J.P. (2012). "Knowledge level of poultry farmers about recommended poultry farming practices". *Indian Research Journal of Ext. Edu.* 12 (1) : 51-54.

Jiji, R.S. and Vijayan, R. (2012) " Knowledge of improved livestock and poultry farming practices among tribal women of western ghat region of Nedumangadu taluk in Thiruvananthapuram district". *J. Vet. Anim. Sci.* 2012, 43 :52- 55.

Jitarwal, R. (2003). "Knowledge and adoption of improved practices in rearing cross-bred cows by the farmers in Jaipur district of Rajasthan". M.Sc. (Ag.), RAU, Bikaner, Campus : Jobner.

Kandian, K.S and Kumar, R. (2001). "Information processing pattern of dairy farmers of Kangra valley". *Ind. J. of Extn. Edu.*, XXXVIII (1&2) : 65-67.

Kavad, S.D., Patel, R.B. and Joshi, V.D. (1997-98). "Impact of cooperative sugar factories on sugarcane growers of south Gujarat". *Guj. Journ. of Extn. Edn.*: Vol VIII & IX : 125-127.

Khan, A.G. (2000). "Thought for new millennium poultry production scenario of India in new millennium". *Indian farming*, April Issue: 19-24.

Khan, P.M. and Chauhan, J. (2005). "Adoption gap in improved technology of animal husbandry". *Ind. J. of Extn. Edu.*, 1 : 63-65.

Khandekar, N. and Sharma, R.P. (2000). "Investigation on technology gap in small scale poultry farming". *Ind. J. of Extn. Edu.*, XXXV (3): 262-265.

Khandekar, N. and Sharma, R.P. (2000). "Investigation on technology gap in small scale poultry farming". *Indian Journ. of Poultry Science*, XXXV (3): 262-265.

Khati, D.S. and Kumar, Narendera (1996). "Chick rearing in high altitude areas with special reference to Uttarakhand and Kinnaure regions". *Indian Farming*, September Issue: 49.

Kuhar, Deepak and Singh, S.P. (2006). "Knowledge of rural women about buffalo housing management practices". *J. Res.H.A.U.*,36: 141-145.

Kumar, R. and Satpathy, K.K. (2001). "Identification of problems in agriculture and allied sectors through PRA techniques in watershed areas for sustainable production". *Proceeding of 5th Agricultural Science Congress on Sustainable Development of Mountain Agriculture*, April, 4-7, Guwahati Assam.

Kumar, S., Panjabi, N.K. and Mohammad, A. (2002). "Constraints causing serious concern to turmeric growers in Rajathan". *Journ of Extn. Edn.* Vol. XI (3) : 2886-2832

Kumhar, H., Singh, S., Jangid, M.K. and Dhayal, B.L. (2015) "Adoption of improved animal husbandry practices among the dairy farmers". *Indian Journals of Social Research* vol. 56 (3) May- June, 2015 :409- 414.

Lohakare, A.C., Guwande, S.H., Banthiya, B. and Landge, S.P. (2015) "Adoption of animal husbandry practices and constraints faced by cattle owners in suicide affected district of vidarbha region in Maharashtra". *Indian Journals of Social Research* vol. 56 (6) Nov.-Dec., 2015 :1003- 1013.

Mahapatra, S.C. (1996). "Trends in poultry research". *Indian Farming*, Sep. Issue: 37-40.

Mathiyalagan, P. (1997). "Acceptance pattern of poultry farm practices". *Maha. Journ. of Extn. Edn.* XVI : 100-103.

Mathur, P. (2001). "Problems and prospects of improved cattle management in Arid Western Plain Zone of Rajasthan". Ph.D. Thesis, MPUAT, Udaipur (Rajasthan).

Meena, B.L. (1994). "A study on adoption and training needs of tribal women in improved dairy farming practices in Jaipur district (Rajasthan)". M.Sc. Thesis, NDRI, Karnal.

Meena, B.S. (1993). "A study of dairy farming practices and training needs as perceived by farmers of Sawai Madhopur district (Rajasthan)". M.Sc. Thesis, NDRI, Karnal.

Meena, L.R. (1998). Role of tribal and non tribal farm women and their training needs in improved animal husbandry in Udaipur district of Rajasthan. M.Sc. (Ag.) Thesis, RAU, Campus : Udaipur.

Meena, M.L., Sharma, N.K. and Dudi, A. (2007). "Buffalo keepers

adoption about improved buffalo production practices". *Ind. Res. J. Extn. Edu.*, 7 (2&3) : 65-68.

Metha, S.S. (2008). "Value addition at farm gate to solve problems of farmers in drought prone area". *Financing Agriculture – A National. J. Agric. and Rural Develop.* (11-12) : 18-22.

Mundhawa, A.B., Patel, A.A. and Patel, B.T. (1997-98). "Grower's adoption behavior of production technologies of irrigated wheat". *Guj. Journ. of Extn Edn.* Vol.: VIII & IX: 1-5.

Nair, B.C. and Ghadoliya, P. (2000). "Economic viability of layer farming in the state of Goa". *Ind. J. of Poultry Sci.*, XXXV (1): 73-76.

Nath, M., Singh, B.P. and Singh, R.V. (2000). "Differential diagnosis of poultry diseases through excel spread sheet based programme". *Proc. International Conference on small Holder Livestock Production System in Developing Countries.* Nov. 24-27, thrissur, Kerala, India.

Nishi, (1996). "Comparative study of beneficiaries and non-beneficiaries of Intensive Mini Dairy Project, Lucknow (U.P.)". M.Sc. Thesis, NDRI, Karnal.

Oyeyinka, R.A., Raheem, W.K., Ayanda, I.F. and Abiona, B.G. (2011) "Poultry farmers awareness and knowledge improved production practices in Afijio, local government area, Oyo state, Nigeria". *E3 Journal of Agricultural Research and Development*, Vol. (1) Dec. 2011: 001- 008.

Pandey, R. and Grover, I. (2009). "Motivated factors and reasons for

joining women dairy cooperatives and enterprise satisfaction of rural women". *Ind. J. Social Res.* 50 (2) : 203-211.

Paonam, M. and Ram, D. (2015) "Awareness level of poultry husbandry practices by the poultry farmers in Imphal west district of Manipur". *Indian Journal of extension education* Vol. 51, No. 3&4, 2015: 172-174.

Patel, A.A. and Patel, R.K. (1999-2000). "Growers managerial ability for plant protection measures in Chilli crop". *Guj. Journ. of Extn. Edn.* Vol. X & XI: 1-4.

Patel, B.S. and Acharya, R.R. (1997-98). "Impact of tribal training center on knowledge and adoption of participant and non-participant farmers in Dahod district". *Guj. Journ. of Extn. Edn.* Vol.: X & XI: 65-66.

Patel, G.R., Vyas, H.V. and Patel, K.F. (1999-2000). "Technological gap in poultry farming". *Guj. Journ. of Extn. Edn.* Vol. X & XII : 65-66.

Patel, S.R., Patel, R.B. and Joshi, V.D. (1997-98). "Identification and adoption of indigenous technical knowledge by sugarcane growers". *Guj. Journ. of Extn. Edn.* Vol. VIII & IX : 57-61.

Patel, V.T., Prajapati, M.R., Joshi, K.M., Choudhary, N.V. and Soni, M.C. (1999-2000). "Adoption of recommended dry farming technology of cotton in North Gujarat". *Guj. Journ. of Extn. Edn.* Vol. X & XII : 32-36.

Patil, A.P., Gawande, S.H., Nande, M.P. and Gobade, M.R. (2009). "Constraints faced by the dairy farmers in Nagpur district while

adopting animal management practices". *Veterinary World*, 2 (3) : 111-112.

Paul, N. (2003). "Problems and prospects of poultry enterprise in kathua district of Jammu and Kashmir", Ph.D. (Ag.) Thesis MPUAT, RCA, Udaipur.

Paul, N. and Sharma, V.P. (2004). "Problem and prospects of poultry enterprise in Kathua district of Jammu and Kashmir". Ph.D. Thesis, RCA, Udaipur.

Podikanju, B., Panwar, J.S. and Sharma, F.L. (1999). "Knowledge of farmwomen about modern livestock management practices in Udaipur district of Rajasthan". *Raj. J. of Extn. Edu.*, 7 : 31-34.

Prakash, N; Kumar, R. and Pal, P.P. (2000). "Improvement of backyard poultry in Meghalaya". *Proceeding of International Conference on Small Holder Livestock Production System in Developing Countries*, Nov. 24-27, Thrissur, Kerala, India.

Pushpa, P.; Biradar, N. and Hanchinal, S.N. (2010). "Livestock production system in rural and peri urban area of Belgalm district of Karnataka". *Ind. J. Soc. Res.*, 51 (2) : 197-208.

Pyasi, V.K; Singh, R.K. and Dahayat, A.K. (2002). "Peoples comprehension towards scientific technology in Jabalpur." *Ind. Res. J. of Extn. Edu.*, II (1): 93-96.

Rahman, J.; Kolita, G. and Sharma, K. (2005). "Improved dairy practices adopted by Mizo Farmers". *Agril. Extn. Review*, May-June- 2005, (15).

Rajput, A.M., Saxena, K.K. and Singh, R.L. (2002). "Production performance of cotton varieties and economic constraints in adoption of cotton production practices on tribal farmers in M.P.". *Indian Research Journ. of Extn. Edn.* Vol.. II (1) : 72-75.

Ram, H. and Meena, B. S. (2015) "Knowledge of improved dairy farming practices among the member and non- member of milk co-operative societies in Hanumangrah district of Rajasthan". *Indian Journal of Social Research*, vo. 56 (1) Jan.- Feb. 2015; 13-18.

Rao, M.S. and Mathur, M.N. (2002). "Entrepreneurial behaviour of vegetative growers". *Journal of Research*, ANGRAU, 31 (1) : 101-104.

Rao, S.V.N. and Natchimuthu, K. (2007). "Livestock production technology transfer-Approaches and challenges". National Symposium on Recent Trends in Policy Initiative and Technological Interventions for Rural Prosperity in Small Holder Livestock Production Systems held at College of Veterinary Science, Tirupati, 20 to 22nd June, (167-177).

Reddy, G.R. and Reddy, S.J. (2000). "Extent of adoption of poultry technologies by diversified farmers in Guntur district of Andhra Pradesh". *Journ. of Research ANGRAU*, Vol. XXXVIII (1&2) : 45-50.

Reddy, N.P.V.R.; Rao, K.S. and Moorthy, P.R.S. (2001). "Problems in dairy farming as perceived by farmers of Prakasam district of Andhra Pradesh". *Proceeding of 5th Agricultural Science Congress on Sustainable Development of Mountain Agriculture*, April 4-7,, Guwahati, Assam.

Rohilla, P.P; Bujarbarnah, K.M. and Singh, W.R. (2000). "Pig and poultry rearing practices in Nagaland". *Proceeding of International Conference on Small Holder Livestock Production System in Developing Countries*, Nov. 24-27, Thrissur, Kerala, India.

Sah, A.K. (1996). A descriptive study of existing dairy farming practices and constraints in adoption of improved dairy practices among dairy farmers in Banka district (Bihar)". M.Sc. Thesis, NDRI, Karnal.

Sankhala, G. and Sharma, B.M. (2001). "Role performance of farm women in agriculture and dairy husbandry: An analysis." *Raj. J. of Extn. Edu.*, VIII & IX: 10-13.

Sapkota, D. and Ray, M.N. (1997). "Socio-economic variables for poultry meat and egg consumption in the farmers of Lakhimpur district of Assam". *Ind. J. of Poultry Sci.*, 32 (2): 159-163.

Sathe, B.S. (1996). "Need for better infrastructure". *The Hindu Survey of Indian Agriculture*: 117.

Satyanarayana, G. and Rao, R.P. (2002). "Knowledge of oilpalm growers" *Journ. of Extn. Edn.* Vol. XI (3) : 2866-2870.

Sharma, F.L. (1990). "Problems and prospects of livestock development in tribal area of Rajasthan". Ph.D. Thesis, R.A.U., Campus Udaipur.

Sharma, F.L. and Intodia, S.L. (1997-98). "Impact of institutional training on knowledge of tribal farmers". *Guj. Journ. of Extn. Edn.* VIII & IX

: 57-61.

Sharma, K. and Saini, G.S. (2003). "Knowledge of the secretaries of milk co-operative societies regarding animal husbandry practices". *Ind. Res. J. of Extn. Edu.*, 3 (1) : 84-86.

Sharma, K.; Singh, S.P. and Yadav, V.P.S. (2009). "Knowledge of dairy farmers about improved buffalo husbandry management practices". *Ind. Res. J. Extn. Edu.*, 9 (3) : 51-54.

Sharma, P.K; Singh, R.A. and Chopra, S.K. (2000). "Adoption of feeds and feed management practices by broiler farmers in Haryana state". *Proceeding of International Conference on Small Holder Livestock Production System in Developing Countries*, Nov. 24-27, Thrissur, Kerala, India.

Sharma, R.J. (2007). "Livestock Waste Management". National Symposium on Recent Trends in Policy Initiative and Technological Interventions for Rural Prosperity in Small Holder Livestock Production Systems held at College of Veterinary Science, Tirupati, 20 to 22nd June, (144-146).

Sihag, S.; Grover, I. and Sihag, S. Z. (1996). "Adoption of animal husbandry innovations by the rural women". *Indian Journal of Animal Production Management*, 2 (1) : 24-29.

Singh, B. and Chahal, S.M. (2000). "Adoption of approved practices and constraint analysis for broiler production in Jind district of Hararyana state". *Proceeding of International Conference on Small Holder Livestock Production System in Developing Countries*, Nov. 24-27, Thrissur, Kerala, India.

Singh, S. (1994). "Economics of layer poultry farming in Haryana".
Poultry Guide, 39 (4) : 73-77.

Singh, S.P. (2004). "Impact on export prospects of livestock products".
Department of economic analysis and research, NABARD,
Mumbai, 12-13.

Singh, V.P., Sharma, V.K., Sidhu, M.S. and Kingra, H.S. (2010). "Broiler
Production in Punjab — An Economic Analysis". *Agricultural
Economics Research Review*, Vol. 23 pp 315-324.

Subramanian, R. (1994). "A study of technological and socio-economic
impact of milk cooperatives in Eroda district (Tamil Nadu)". Ph.D.
Thesis, NDRI, Karnal.

Swaroop, N. (1992). "Contribution of livestock on nation's economy".
M.Sc. Thesis, IVRI, Izzatnagar, Bareilly (U.P.).

Thirumurugan, P. and Singh, Y. (2007). "Organic dairy production :
significance of indigenous cattle and buffaloes". National
Symposium on Recent Trends in Policy Initiative and Technological
Interventions for Rural Prosperity in Small Holder Livestock
Production Systems held at College of Veterinary Science, Tirupati,
20 to 22nd June, (68-72).

Thorat, G.N. (2005) "An analysis of poultry entrepreneurs knowledge
about poultry management practices". M. Sc. (agri.) thesis, A.A.U.
Anand.

Umar, J., Kumar, B. and Kumar, S. (2011). "Constraints perceived by
farmers in adopting scientific dairy farming practices in Madhuri

district of Bihar". *Research Journal of Agricultural Sciences*, 2 (1) : 142-145.

Verma, K.C. (1996). "Common infections diseases of poultry in India". *Indian Farming*, Sep. Issue: 92-98.

Vijayaraghavan, R. (1997-98). "Entrepreneurial behaviour of farmers". *Guj. J. of Extn. Edu.*, 8 & 9 : 128-129.

Problems and Prospects of Recommended Poultry Farming Practices in Jaipur District of Rajasthan

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ABSTRACT

The poultry production in our country has made a significant progress over the years due to research and development thrust of the government and organized private sector. Poultry farming is considered as an important tool for self-employment as it offers vast scope for generating income in socially and economically backward areas. No other livestock production programme in our country has made as much progress in a short period as the poultry sector has made. The revolutionary changes made in poultry industry in the last four decades is a matter of great pride. The poultry sector provides livelihood to nearly one lakh farmers and contributes to a great extent to the national income.

In Rajasthan, poultry industry is a live segment and source of revenue to the government. In the last five decades, Jaipur region has made manifold progress in the development of the poultry sector. Jaipur district is one such districts which has made a great headway in the promotion of poultry sector. With more than 14889 organized poultry farms, it has engaged more than 45000 people directly or indirectly.

But in spite of so many listed achievements, efforts and advances, the overall scene seems to be quite dismal. More over, no systematic research has been conducted in the past to study the farmers situation engaged in this vocation. Keeping all this in mind, the present investigation was carried out with the following objectives:

- To assess the knowledge level of poultry farmers regarding recommended poultry farming practices.
- To measure the extent of adoption of recommended poultry farming practices by the farmers.
- To measure the contribution of poultry farming in the overall economy of poultry farmers.
- To identify the constraints as perceived by the poultry farmers in adoption of recommended poultry farming practices.

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- To explore the modalities for future prospects of improvement in poultry farming.

The present study was conducted in Jaipur district of Rajasthan. The proposed district consisted of respondents from large, medium and small category of poultry farmers were selected a list of livestock census 2007 all the 200 organized poultry farmers.

Data on that structured tool were collected personally from the respondents through face to face technique of interview. To arrive at the specific inferences, various statistical measures viz., percentage, mean percent score, mean and z-test etc., were used.

Major sequels of the study are as follows :

The majority of the small, medium and big poultry farmers were found to have medium knowledge and adoption about the improved poultry practices. Findings further revealed that these was significant and non- significant different in knowledge, adoption levels as well as constraints between selected categories of poultry farmers with regard of recommended poultry aspects. Poultry farmers had higher MPS of knowledge (87.44), adoption (81.49) and constraints (77.95) about recommended poultry aspects.

They possessed maximum knowledge with respect to brooding practices and minimum knowledge about chick procurement practices, maximum and minimum adoption was found in case of disease management practices and chick procurement practices.

Regarding economic contribution of poultry farming, it was found that the average income from poultry rearing as perceived by the respondents of different categories was 94.29, 94.07 and 94.41 per cent of the gross income from all sources in case of small, medium and big poultry farmers. In all, the poultry farming contributed around 21.47 to 22.05 per cent of the actual income of the poultry farmers.

The various categories of most important constraints as perceived by the poultry farmers in adoption of improved poultry production practices, were "Lack of knowledge in preparing balanced ration" as

related to technical constraint. “Shortage of floor space “ related to infrastructural constraints, “Wastage of feed by birds” related to economic constraints, “Lack of a proper marketing structure” related to marketing constraints, “Serve criticism of poultry farmers from religious minded people” related to social constraints, “High mortality of chicks” related to input constraints, “Poor performance of non electric power sources” related to power supply constraints and “Un-availability of veterinary doctors in time” related to miscellaneous constraints.

Majority of the poultry farmers were confronted with high degree of constraints in propagating poultry farming. Economic constraints came to be the most severe constraints followed by technical and marketing constraints. Whereas, the least perceived constraints were social constraints.

On the basis of findings, it is suggested that due emphasis should be given on dissemination of knowledge about recommended poultry farming practices through organization of specialized training of poultry rearing in order to improve the existing poultry farming practices. For the improvement of existing indigenous poultry, good quality chicks and pure cock should be made available to the poultry farmers. Similarly, adequate financial assistance in the form of subsidy.

राजस्थान के जयपुर जिले में संस्तुतित कुक्कुट पालन व्यवसाय की समस्याएँ एवं संभावनाएँ

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अनुक्षेपण

कुक्कुट उत्पादन के क्षेत्र में हमारे देश ने विगत वर्षों में सराहनीय प्रगति की है। इसका मुख्य श्रेय सरकारी एवं संगठित निजी क्षेत्र द्वारा किए गए शोध एवं विकास कार्यों को जाता है। कुक्कुट पालन को स्वरोजगार उपलब्ध करवाने की दृष्टि से एक प्रमुख औजार माना गया है क्योंकि यह सामाजिक एवं आर्थिक रूप से पिछड़े हुए क्षेत्रों में आय का एक प्रमुख स्रोत बनने की क्षमता रखता है। किसी भी पशुपालन उत्पादन कार्यक्रम की तुलना में कुक्कुट व्यवसाय ने इतने कम समय में काफी उन्नति की है। पिछले चार दशकों में कुक्कुट उधोग में हुई गतिशील एवं क्रांतिकारी प्रगति एक गौरव का विषय है। कुक्कुट खण्ड करीब एक लाख कृषकों को प्रत्यक्ष रूप में रोजगार उपलब्ध करवाता है और इसका राष्ट्रीय आय में भी महत्वपूर्ण योगदान है।

राजस्थान में कुक्कुट व्यवसाय एक सजीव अंश हैं और सरकार की आमद का मुख्य स्रोत है। पिछले चार दशकों में जयपुर संभाग ने भी कुक्कुट उत्पादन के क्षेत्र में बहुस्तरीय प्रगति की है। जयपुर संभाग के जिलों में से जयपुर जिले ने कुक्कुट उधोग में तुलनात्मक दृष्टि से सराहनीय उन्नति की है। 14889 आयोजीत फार्मों के साथ इस जिले में कुक्कुट उधोग लगभग 45000 लोगों को प्रत्यक्ष एवं अप्रत्यक्ष रूप से रोजगार उपलब्ध करवाता है। परन्तु इतनी सारी सूचीबद्ध उपलब्धियों, कोशिशों एवं प्रगति के बावजूद कुल मिलाकर दृश्य धुमिल माना गया है। इसके अलावा इस क्षेत्र में भूतकाल में ऐसा कोई भी व्यवस्थित शोध नहीं किया गया है जिससे कि इस व्यवसाय से जुड़े किसानों की जमीनी हालात का जायजा लिया गया हो। इन सब तथ्यों को ध्यान में रखते हुए वर्तमान अध्ययन निम्नलिखित उद्देश्यों को लेकर किया गया।

- कुक्कुट पालकों द्वारा अनुमोदित कुक्कुट पालन क्रियाओं के वर्तमान ज्ञान स्तर का आंकलन करना।

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- कुक्कुट पालकों द्वारा अनुमोदित कुक्कुट पालन क्रियाओं के ग्राह्यता स्तर का पता लगाना।
- कुक्कुट पालकों द्वारा अनुमोदित कुक्कुट पालन क्रियाओं की ग्राह्यता में अन्तर को ज्ञात करना।
- कुक्कुट उधम का कुक्कुट पालकों के सर्वांगीण आर्थिक स्तर में योगदान का अध्ययन करना।
- कुक्कुट पालकों को अनुमोदित कुक्कुट पालन क्रियाओं की ग्राह्यता में आने वाली बाधाओं का पता लगाना।
- कुक्कुट उत्पादन की भविष्य में सम्भावनाओं की सुधारात्मक रीतियों को तलाशना।

वर्तमान अध्ययन राजस्थान के जयपुर जिले में किया गया। जिले में वृहत, मध्यम एवं लघु समुह के कुक्कुट पालक पशु जनगणना सूची के सभी 200 आयोजित कुक्कुट पालकों का चयन किया गया। मानकीकृत अनुसूची पर व्यक्तिगत साक्षात्कार कर उत्तरदाताओं से आकड़ों को एकत्रित किया गया। विशेष निष्कर्षों पर पहुँचने हेतु विविध सांख्यिकीय विधियों का उपयोग कर आकड़ों का विश्लेषण किया गया।

अध्ययन के मुख्य निष्कर्ष इस प्रकार रहे :

अधिकतम कुक्कुट पालकों को कुक्कुट पालन क्रियाओं के बारे में ज्ञान व ग्राह्यता का स्तर मध्यम स्तर का था। आगे शोध के परिणाम दर्शाते हैं कि कुक्कुट पालकों की सभी चयनित श्रेणियों में कुक्कुट पालन क्रियाओं के बारे में ज्ञान, ग्राह्यता एवं बाधाओं के स्तर के बीच अर्थपूर्ण, अनर्थपूर्ण एवं ऋणात्मक अर्थपूर्ण अन्तर पाया गया। कुक्कुट पालकों में कुक्कुट पालन क्रियाओं के बारे में ज्ञान, ग्राह्यता एवं बाधाओं के औसत प्रतिशत प्राप्तांक क्रमशः 87.44 प्रतिशत, 81.49 प्रतिशत एवं 77.95 प्रतिशत थे।

अधिकतम ज्ञान आवास सम्बन्धी प्रक्रियाओं एवं न्यूनतम ज्ञान चुजा खरीदने प्रक्रियाओं के बारे में पाया गया। अधिकतम ग्राह्यता बीमारीयों सम्बन्धी प्रक्रियाओं तथा न्यूनतम ग्राह्यता चुजा खरीदने सम्बन्धी प्रक्रियाओं में पाई गई।

कुक्कुट पालन उद्यम के आर्थिक योगदान के सम्बन्ध में यह पाया गया कि कुक्कुट पालकों द्वारा सभी स्त्रोतों से प्राप्त होने वाली कुल आय का प्रतिशत विभिन्न श्रेणियों में (लघु, मध्यम एवं वृहत) क्रमशः 94.29, 94.07 एवं 94.41 था। सभी कुक्कुट पालकों की वास्तविक आय में कुक्कुट पालन का योगदान लगभग 21.47 से 22.07 प्रतिशत था

कुक्कुट पालकों में अनुमोदित कुक्कुट पालन क्रियाओं की ग्राह्यता में आने वाली बाधाएँ जैसे संकुलित राशन तैयार करने की ज्ञान की कमी आदि तकनीकी बाधाएँ मुख्यतः महसूस की गईं। इसी तरह संरचनात्मक बाधाओं में मुख्य बाधाएँ जगह की कमी, आर्थिक बाधाओं के सम्बन्ध में उत्तरदाताओं में पाये जाने वाली मुख्य समस्याएँ “पक्षियों के द्वारा भोजन बर्बाद करना” थी विपणन बाधाओं के सम्बन्ध में पाये जाने वाली मुख्य समस्याएँ एक उचित विपणन संरचना की कमी थी। सामाजिक बिन्दुओं के सम्बन्ध में पाये जाने वाली मुख्य समस्याएँ धार्मिक सोच के लोगों से कुक्कुट पालकों की समस्याएँ आना थी। साधन सम्बन्धी बाधाओं के सम्बन्ध में पाये जाने वाली मुख्य समस्याएँ चुजो की उच्च मृत्युदर होना थी। बिजली वितरण सम्बन्धी बाधाओं के सम्बन्ध में पाये जाने वाली मुख्य समस्याएँ बिजली आपूर्ति की कमी थी। विविध बाधाओं के सम्बन्ध में पाये जाने वाली मुख्य समस्याएँ ‘पशु चिकित्सक का समय पर नहीं मिलना थी। सभी बाधाएँ कुक्कुट पालकों द्वारा प्रबल रूप से महसूस की गई थी जिनका स्तर उच्च पाया गया। सर्वाधिक प्रबल बाधाएँ आर्थिक बाधाएँ, तकनीकी बाधाएँ एवं विपणन सम्बन्धी बाधाएँ थी जबकि न्यूनतम बाधाएँ सामाजिक बाधाएँ पाई गईं।

शोध परिणामों के आधार पर प्रचलित कुक्कुट पालन क्रियाओं के सुधार के क्रम में निम्न सुझाव दिये जाते हैं जैसे अनुमोदित कुक्कुट पालन क्रियाओं के ज्ञान का प्रचार विशेष प्रशिक्षण द्वारा करने पर जोर देना चाहिए। उपलब्ध देशी कुक्कुट के सुधार के लिए अच्छे गुणों के चुजे व शुद्ध नस्ल के मुर्गों का उपलब्ध करवाना तथा कुक्कुट पालकों को आर्थिक रियायत प्रदान करना।

(Covering letter sent to experts)

**DEPARTMENT OF EXTENSION EDUCATION
S.K.N. COLLEGE OF AGRICULTURE, JOBNER**

From : Dr. G.S. Bangarva

Professor

Department of Extension Education

S.K.N. College of Agriculture
Jobner -303329

To

Dr./Sh./Smt./.....

Dear Sir / Madam,

I hereby, draw your kind attention that my Ph.D. student Mr. Hanuman Sahay Bunkar is going to conduct a research on problem entitled, "**Problems and Prospects of Recommended Poultry Farming Practices in Jaipur District of Rajasthan**" for the partial fulfillment of Ph. D. (Ag.) Degree in Extension Education. We are trying to develop a comprehensive schedule for measuring various objectives of the study:

- (i) To assess the knowledge level of poultry farmers regarding recommended poultry farming practices.
- (ii) To measure the extent of adoption of recommended poultry farming practices by the farmers.
- (iv) To measure the contribution of poultry farming in the overall economy of poultry farmers.
- (iii) To identify the constraints as perceived by the poultry farmers in adoption of recommended poultry farming practices.
- (vi) To explore the modalities for future prospects of improvement in poultry farming.

The statements in the schedule have been developed on the basis of relevant literature reviewed, personal experience, discussion held with subject matter specialists (poultry) and extension personnel.

In this context, we want to take advantage of your expertise knowledge. Kindly spare some time and go through the schedule very critically and feel free to comment upon or add or delete or modify the statements, if necessary, so that the final schedule can be developed prior to under take the study.

Kindly mail the schedule after your necessary comments in the self addressed stamped envelope attached with the schedule.

Thanking you for your kind co-operation.

Yours sincerely

(G.S. Bangarva)

APPENDIX-I
(INTERVIEW SCHEDULE)

Respondent No-----

Date -----

SECTION I

A) General information

1. Name of the respondent..... 2. Father's Name.....
3. Age.....4. Village.....5. Mobile number.....6. Size of poultry unit.....
7. Year of establishment.....
8. Farming experience.....

B) Personal characteristics/Socio-economic status scale

S.No.	Categories	Indicators	Score
1.	Caste	Scheduled caste	1
		Scheduled Tribe	2
		Other Backward Caste	3
		General Caste	4
2.	Occupation	Labour	1
		Caste occupation	2
		Agricultural/Animal/Husbandry	3
		Business	4
		Service	5
3.	Education	Illiterate	0
		Primary	1
		Middle	2
		Secondary	3
		Higher secondary	4
		Graduate	5

		Post-graduate and above	6
4.	Size of land holding	Landless	0
		Marginal holding	1
		Small holding	2
		Big holding	3
5.	Proximity to market	Less than 1 km	1
		1-5 km	2
		5-10 km	3
		10-20 km	4
		Above 20 km	5
6.	Source of credit	Relatives	1
		Money lender	2
		Cooperative	3
		Commercial banks	4
		Other	5
7.	Social participation	Not member of any organization	0
		Member of one organization	1
		Member of more than one organization	2
		Member of committee	3
		Leader in organization	4
		Public leader	5

SECTION-I
TO ASSESS THE KNOWLEDGE LEVEL OF POULTRY
FARMERS REGARDING RECOMMENDED POULTRY FARMING
PRACTICES

(A) Chick procurement practices :

Right/Wrong

(1) (0)

(i) What should be the optimum weight of one day old chick to be reared ?

.....
.....

(ii) What is a broiler ?

.....

..... (iii) Please name any improved breed of broiler ?

.....
.....

(iv) Should stock of the chicks for a particular lot be uniform as far as possible ?

.....
.....

(v) Why should unloading of chicks be gentle and quick ?

.....
.....

(vi) Why chicks are not withheld in boxes for long time after delivery ?

.....
.....

(vii) Why releasing of chicks from the boxes should be at the earliest ?

(B) Brooding practices :

(i) Before how many hours brooder is heated for letting chicks to brood ?

.....

(ii) What do you mean by natural and artificial brooding system ?

.....

- (iii) What must be the thickness of bedding material, on which chicks are kept to brood?
.....
- (iv) How chicks are feed kept for brooding ?
.....
- (v) why the chicks are offered plenty of water before feeding in the beginning ?
.....
- (vi) What is chick guard ?
.....
- (vii) Why chick guard is used ?
.....
- (viii) How many days after, chick guard is removed ?
.....
- (ix) What is the ratio of dextrose and water to be given to the brooding chicks ?
.....
- (x) Why beak of chicks are dipped after receiving from hatchery ?
.....
- (xi) Which tonics are mixed in the water to be given to chicks ?
.....

(C) Litter management practices

- (i) What are the basic qualities the litter material must possess ?
.....
- (ii) How much thickness of litter material is spreaded at the time of starting a lot ?
.....
- (iii) How much thick layer of bedding material is added every month on the initially spreaded litter ?
.....
- (iv) What percentage of moisture is necessary to be maintained in litter ?
.....
- (v) What happens when litter becomes dry beyond the limit ?
.....

.....
(vi) What is to be done when litter becomes wet and forms hard crust ?
.....

(vii) After how many days litter should be regularly replaced in a viable poultry unit ?
.....

(viii) Which system is to be preferred to improve the quality of drooping ?
.....

(D) Temperature and light regulation practices :

(i) Why the temperature should be maintained during first to fifth weeks in brooding house ?
.....

(ii) At which height from the litter, thermometer should be fixed ?
.....

(iii) How much temperature should be kept inside poultry house from fourth week onwards till the sale of birds ?
.....

(iv) What is the source of lighting for birds ?
.....

(v) How many degrees of temperature should be reduced every week inside the poultry house ?
.....

(vi) At which age the lighting hours to be adjusted with total day light to provide optimal light to growers ?

.....

(E) Feeding practices :

- (i) Name atleast two feeds in poultry ?
-
- (ii) Give any four properties of good quality of poultry feed ?
-
- (iii) What should be the percentage of protein and metabolizable energy and minerals in the poultry feed ?
-
- (iv) What should be the proportion of vitamins in the poultry feed ?
-
- (v) What are the sources of minerals in the poultry feed ?
-
- (vi) What should be the level of antibiotic in poultry feed ?
-
- (vii) What is the proper ratio of poultry concentration and grinded maize?
-
- (viii) What is feed requirement of a day old chick ?
-
- (ix) How much feed a bird consumes during its life ?
-
- (x) How efficiently feeding is done in poultry for growers per day ?
-
- (xi) What types of feeders are required for poultry layers per day ?
-
- (xii) What care should be taken during buying feed ingredients ?
-
- (xiii) Why grit box in poultry house is required ?

.....
(xiv) Name the crop which is required as green feed for poultry birds?
.....

(xv) Is it possible to prepare poultry feed by purchasing ingredient from the market ?
.....

(xvi) Ready made feeds are preferred or not ?
.....

(xvii) How much space should be filled in feeder ?
.....

(xviii) What precautions should be taken while changing feeds in poultry ?
.....

(xix) What is use of poultry manure in broiler feed ?
.....

(xx) Should the consumed feed be recorded and tested daily ?
.....

(F) Watering practices :

(i) What should be the quality of water for poultry ?
.....

(ii) What is the method of watering for chicks/birds ?
.....

(iii) At which distance water should be placed ?
.....

(iv) What precautions should be taken while serving water to the chicks ?
.....

(v) Why the chick drinking pots required to be cleaned every day ?
.....

(vi) How many times the water is filled in a day for chicks/birds ?
.....

(vii) How to clean the water before serving to birds?
.....

.....
(viii) How much water is required per chick/day ?

.....
(ix) How much water is required per grower/day ?

.....
(x) How much water is required per layer/day ?

.....
(xi) What source of water is preferred for watering ?

.....
(G) Equipments and spacing practices:

(i) What are the dimensions of an ideal chick feeder ?

.....
(ii) How much feeder space should be provided to chick/grower?

.....
(iii) What should be the height of feeder from the litter?

.....
(iv) How much floor space should be given to chick in brooder house ?

.....
(v) How much space is required per grower ?

.....
(vi) How much space is required per layer ?

.....
(vii) What is community nest ?

.....
(viii) What is feed scoop ?

.....
(ix) What is feeder ?

.....
(x) What is nest box ?

.....
(xi) How much space for nest box and number of nests per 100 layers are needed?

(xii) How much water space is required to the birds at different ages ?

.....

(H) Diseases and parasites control practices:

(i) What are the various diseases of poultry ?

.....

(ii) Do you know about common poultry disease
(Ranikhet, Gumboro, Fowl-pox and Bird flue diseases) ?

.....

(iii) What are the common symptoms of diseases ?

.....

(vi) Which disease is more prevalent in your area ?

.....

(v) Why the bird should be vaccinated against various diseases ?

.....

(vi) What are the common endo-parasites of poultry birds?

.....

(vii) What are the common acto-parasites of poultry birds ?

.....

(I) Vaccination and management practices:

(i) What are the vaccines used in poultry ?

.....

(ii) What are the timing of vaccination for common poultry
disease ?

.....

(iii) Name the chemicals used to control acto-parasites in poultry
?

.....

(iv) Name the chemicals used to control endo-parasites in poultry
?

.....

(v) What measures should be taken to minimize the incidence of
disease in poultry?

.....
(vi) What precautions are required in brooder house/laying house to prevent parasitic infection as well as disease control ?
.....

(vii) What is the vaccination schedule to be followed for common poultry disease ?
.....

(J) Sanitation practices :

(i) At which age, the good sanitary conditions be maintained at poultry farm?
.....

(ii) Why should the outside persons not be allowed to enter the poultry farm ?
.....

(iii) Why a lime or phenyl soaked foot pad placed at the door of the shed ?
.....

(iv) Why proper cleaning of shed is needed when new lot is to be started ?
.....

(v) What is the record of disposing the dead birds ?
.....

(vi) What is record of painting floor with lime ?
.....

(vii) What are the bio-security measures ?
.....

(k) Record keeping and marketing practices:

(i) How the record keeping is done for the feed consumed by birds ?
.....

(ii) How the record of birds mortality is maintained ?
.....

(iii) How the record of day to day expenditure is maintained?
.....

(iv) How is the record of poultry products maintained ?

.....

(v) What is the appropriate time to sell the poultry products ?

.....

(vi) How is the poultry birds health records maintained ?

.....

(vii) What is the demand of poultry products ?

SECTION – II

TO MEASURE THE EXTENT OF ADOPTION OF RECOMMENDED POULTRY FARMING PRACTICES BY THE FARMERS

S.No.	Item	Degree of adoption	
		Adopted (1)	Not adopted (0)
	(A) Chick Procurement practices		
	(i) Do you purchase chicks from a reputed hatchery?		
	(ii) Do you ensure optimum weight of chicks during purchase?		
	(iii) Do you ensure uniformity of lot?		
	(iv) Do you purchase chicks of recommended breed?		
	(v) Do you purchase chicks from a nearby hatchery?		
	(vi) Do you check wings, legs, eyes etc. of the chicks while purchasing?		
	(vii) Do you count the chicks before keeping them to brood?		
	(viii) Do you release the chicks from the boxes at the earliest?		
	(B) Brooding Practices:		
	(i) Do you prepare the brooder house before the arrival of chicks?		
	(ii) Do you start heating the brooder house before letting in the chicks?		
	(iii) Do you use thermometer for checking temperature fluctuations?		
	(iv) Do you provide proper feed and water in brooding house?		

S.No.	Item	Degree of adoption	
		Adopted (1)	Not adopted (0)
(v)	Do you spread required thickness of bedding material on brooder floor?		
(vi)	Do you provide feed to the day old chicks on old papers?		
(vii)	Do you use chick guard?		
(viii)	Do you remove chick guard after prescribed days?		
(ix)	Do you mix some tonic in the water to be given to chicks?		
(x)	Do you use artificial brooding?		
(xi)	Do you dip beak of chick after receiving from hatchery?		
(C)	Litter Management practices:		
(i)	Do you use good quality of litter material?		
(ii)	Do you spread the required thickness of litter material while starting a lot?		
(iii)	Do you spread required thickness of litter material every month regularly?		
(iv)	Do you slightly hoe the litter after regular intervals?		
(v)	Do you maintain required percentage of moisture in the litter?		
(vi)	Do you replace wet and crust formed litter?		
(vii)	Do you change the litter after every lot?		
(viii)	Do you improve the quality of dropping?		
(ix)	Do you adopt deep litter system?		

S.No. Item	Degree of adoption	
	Adopted (1)	Not adopted (0)
(D) Temperature & light regulation practices: (i) Do you maintain the required temperature of brooding during first week? (ii) Do you reduce the temperature @ 5° F every week? (iii) Do you use alternative heating arrangements in case of power failure? (iv) Do you use automatic thermal regulation devices? (v) Do you fix the thermometer at recommended height on the wall? (vi) Do you use optimum temperature for grower? (vii) Do you give optimum light to grower?		
(E) Feeding practices: (i) Do you use the recommended ratio of poultry concentrate and grinded maize? (ii) Do you use balanced ration for feeding poultry? (iii) Do you mix recommended dose of antibiotic in poultry feed? (iv) Do you use starter and finisher mesh in proper balance?		

S.No.	Item	Degree of adoption	
		Adopted (1)	Not adopted (0)
(v)	Do you provide recommended quantity of feed to poultry birds at different ages?		
(vi)	Do you use recommended no. of chick feeders for feeding?		
(vii)	Do you fill the feeders half with feed?		
(viii)	Do you use green feed for poultry?		
(ix)	Do you use poultry manure in broiler feed?		
(x)	Do you use grit box in poultry house?		
(F)	Watering practices:		
(i)	Do you clean the chick waterer as recommended?		
(ii)	Do you properly clean the water or ensure the purity of water before serving?		
(iii)	Do you provide water to the chicks for required no. of times during summer and winter?		
(iv)	Do you place the drinkers at required distances?		
(v)	Do you take proper precautions while serving water within the shed?		

S.No.	Item	Degree of adoption	
		Adopted (1)	Not adopted (0)
	(G) Equipment and Spacing practices:		
	(i) Do you provide required feeder space to the birds at different ages?		
	(ii) Do you provide required floor space to the birds at different ages?		
	(iii) Do you use feeders of required height?		
	(iv) Do you use feeders and waterers of required depth?		
	(v) Do you provide required waterer space to the birds?		
	(vi) Do you use nest box & community nest in poultry?		
	(vii) Do you use feed scoop in poultry?		
	(viii) Do you provide required waterers space to the birds at different ages?		
	(H) Disease Management practices:		
	(i) Do you examine chicks regularly for their health?		
	(ii) Do you separate underdeveloped and weak birds regularly?		
	(iii) Do you vaccinate the chicks at right times?		
	(iv) In case of mortality, do you send the dead birds for post mortem examination?		
	(v) Do you use proper doses of vaccines?		
	(vi) Do you vaccinate the chicks against the bird flue disease ?		
	(vii) Do you follow vaccination schedules?		
	(viii) Do you consult veterinariar /laboratory?		

S.No. Item	Degree of adoption	
	Adopted (1)	Not adopted (0)
(I) Sanitation practices: (i) Do you keep proper sanitary conditions inside the farm? (ii) Do you restrict visits of outsiders in your farm? (iii) Do you put a layer of lime or phenyl soaked footpad at the door of shed? (iv) Do you burry the dead birds deep into the pits? (v) Do you properly disinfect the house before starting a lot? (vi) Do you paint the floor with lime?		
(J) Record Keeping and marketing practices (i) Do you keep records of feed consumed by birds? (ii) Do you keep records of bird mortality? (iii) Do you keep records of day-to-day expenditures? (iv) Do you keep yourself familiar with price of poultry products? (v) Do you keep yourself familiar with demand of poultry products? (vi) Do you sell the produce at appropriate time? (vii) Do you keep the records of health check up diseases, medication, vaccination and de-worming?		

SECTION-III

TO MEASURE THE CONTRIBUTION OF POULTRY FARMING IN THE OVERALL ECONOMY OF POULTRY FARMERS

1. What is the area occupied for housing the poultry?

Area	Rs.per (sq.ft.)	cost of land per year (sq.ft.)
(i) farm house		
(ii) cost of construction of pucca house including brooder house@ 2.0 sq.ft./bird.		
(iii) cost of construction of feed cum egg store room @1sq.ft. for 20 birds.		

2. Who looks after the poultry?

No. of persons	Money paid/year
(i) One self/family member/manager (3)	
(ii) Casual labour (2)	
(iii) Permanent labour (1)	
Total	

3. If hired, for which activities do you hire the labourer ?

Activities	working hours	amount/year
(i) Hoeing cleaning the shed.	3 hrs	
(ii) Feeding in poultry	2 hrs	
(iii) Watering in poultry	1 hrs	
(iv) Watch and ward	1 hr	
	total time spent	total amount
paid		

4. Where do you get the poultry feed from?

Concentrate		A	b	c
I.	Market			
(i)	Co operative			
(ii)	Village shop			
II.	Own farm production			
		Total		

A= quantity, b=rate c= amount

5. How much do you spend per year on feeding of poultry?

- (i) Feeding cost for chicks upto 2month age @kg/chick/2 months
 - (ii) Feeding cost for grower upto 5month age @ 8kg/grower/3 months
 - (iii) Feeding cost for layers @ 38kg/ bird/12 months
6. How much do you spend on transporting feed from market to home?.
 7. What is yearly cost of transporting poultry to animal market for selling & purchasing?
 8. What is the yearly cost spent on medicine and doctors for poultry care?
 9. How much money is spent on insurance charges for shed and bird?
 10. What is the yearly cost spent on electricity, water and miscellaneous expenditure?
 11. How much money is spent on cost of day old chicks?
 12. How much do you spend on repair and maintaintance per year?
 13. How much do you spend on interest on working capital ?
 14. How much money is spent on cost of litter per batch?
 15. How much money is spent on cost of sanitation condition?
 - 16. On an average how much do you spend per year on**

utensils for poultry?

- (a) Buckets
- (b) Feeders
- (c) Brooders
- (d) Egg trays
- (e) Nest
- (f) Spade
- (g) Wreck
- (h) Waterers

17. WHAT IS THE TOTAL INCOME FROM SALE OF POULTRY PRODUCTS IN A YEAR?

(A)	Products	consumed	sold	rate	total income
	received/year				
	(a) Eggs				
	(b) Broilers				
	(c) Roaster				
	(d) Layers				
	(e) Culled birds				
	(f) Cocks				
	(B) Sale of other items				
	(a) Manures				
	(b) Scarp materials				
	(c) Gunny bags				
	(d) Others				

SECTION -IV
TO IDENTIFY THE CONSTRAINTS AS PERCEIVED BY THE
POULTRY FARMERS IN ADOPTION OF RECOMMENDED
POULTRY FARMING PRACTICES

S.No.	Constraints	Degree of constraints severity		
		Most Severe (3)	Severe (2)	Least severe (1)
(A) Technological constraints				
(i)	Lack of knowledge regarding improved breeds of broiler.			
(ii)	Lack of knowledge about reputed hatcheries.			
(iii)	Lack of skill in preparing brooder house.			
(iv)	Lack of knowledge about preparing balanced ration.			
(v)	Lack of knowledge about diseases of hatchery.			
(vi)	Lack of knowledge regarding administration of poultry medicines.			
(vii)	Lack of skill in performing vaccination.			
(viii)	Lack of knowledge about temperature regulation.			
(ix)	Lack of knowledge about feed requirement at different age group of birds.			
(x)	Lack of knowledge about disease preventive measures.			
(xi)	Frequent incidence of diseases.			
(xii)	Lack of training for carrying out vaccination.			
(xiii)	Lack of knowledge about bio-security measures.			
(B) Infrastructural constraints				
(i)	Shortage of floor space.			
(ii)	Poor housing facilities.			
(iii)	Poor feed storage facilities.			

- (iv) Non availability of scientific housing structures.
- (v) Lack of rodent and predator proof houses.
- (vi) Shortage of feeding space and watering space
- (C) Economic constraints:**
 - (i) High cost of feed.
 - (ii) Poor financial condition.

S.No.	Constraints	Most Severe (3)	Severe (2)	Less severe (1)
(iii)	High Sale tax imposed by the Govt.			
(iv)	High cost of chicks.			
(v)	Difficulty in getting loans.			
(vi)	High cost of transportation.			
(vii)	High rate of interest on loans.			
(viii)	Wastage of feed by birds.			
(ix)	High mortality.			
	(D) Marketing constraints.			
(i)	High fluctuations in selling price.			
(ii)	High demand restricted only to few months.			
(iii)	Non-remunerative selling prices.			
(iv)	Shortage of local market.			
(v)	High involvement of middlemen.			
(vi)	Lack of proper marketing structure.			
(vii)	Non-availability of transportation facilities in time			
(viii)	Problem in marketing of eggs.			
(ix)	Lack of cooperative societies in poultry.			
(x)	Problem in marketing of poultry birds.			
(xi)	No purchase of egg and meat by Govt. agencies.			
(xii)	Lack of policy of Govt. for poultry.			
	(E) Social constraints:			

- (i) Lack of awareness among people about balanced diet.
- (ii) Vegetarian food habits of the people.
- (iii) Consideration of poultry as a low grade occupation in the society.
- (iv) Severe criticism of poultry farmers from religious minded people.
- (v) Pressure from near by houses due to bad smell

(F) Input related constraints.

- (i) Poor quality of chicks
- (ii) Scarcity of feed.
- (iii) Paucity of water.
- (iv) Non-availability of chicks in time.
- (v) Non-availability of vaccines and other medicines in time.

S.No.	Constraints	Most Severe (3)	Severe (2)	Less severe (1)
(vi)	Problem of spurious drugs.			
(vii)	High mortality of chicks.			
(viii)	Poor quality of feed.			
(ix)	Non-availability of chicks from local areas.			
(x)	Low egg production of layers.			
(xi)	Small size egg of layers.			
(xii)	Scarcity of balanced feed			
(G)	Power supply related constraints			
(i)	High rate of power charges.			
(ii)	Difficulty in getting electricity connection.			
(iii)	Unscheduled power-cuts.			
(iv)	Long hours of power cuts.			
(v)	Poor performance of non-electric			

power sources.

- (vi) High fluctuations in voltage in power supply.

(H) Miscellaneous constraints.

- (i) High degree of risk involved.
- (ii) Cumbersome work with live birds.
- (iii) Uncertainty of vocation.
- (iv) Problematic environment.
- (v) Lack of literature on poultry in simple language.
- (vi) Poor extension services.
- (vii) Non-availability of veterinarian in time.
- (viii) Sale market at distant place.
- (ix) Non-availability of trained men power.
- (x) No minimum support price (for sale) by Govt.